State of Florida

Department of Transportation

FDOT Right-of Way Mapping

Course Guide

July, 2015

Production Support CADD Office

TALLAHASSEE, FLORIDA

http://www.fdot.gov/cadd/

FDOT Right-of-Way Mapping

Description

The intent of this course is to present the various tools available to the Right of Way Mapping CADD Draftsman and their use in a production environment. The student will come away with a basic understanding of the workflow used in creating a R/W Mapping Detail Sheet Project via MicroStation, GEOPAK and FDOT CADD software.

This course covers the following but is not limited to:

- Creation of FDOT CADD Project
- MicroStation Workspace
- FDOTSS4 FDOT Menu
- RW Map Sheets
- Line Style Tools
- Text Tools
- Cells
- Arrows
- Certification Notes
- Legal Descriptions
- Tool Boxes
- QC Standards
- GEOPAK Mapping Procedures
- GEOPAK Design & Computation Manager
- Attaching Reference Files
- Create Annotation by Methods
- General Notes
- Design File Clipping with GEOPAK Plan/Profile
- Enter Sheet Title Block Using Sheet Info (Sheet Navigator)
- Create RW TAB Sheet
- Create Plot Files

Objectives

Prerequisites

FDOT MicroStation V8i Essentials, Parts I & II.

Duration: ***32 Hours***
Professional Credit Hours: ***28 PDHs***

Copyright © 2015 by Florida Department of Transportation
All rights reserved
For information about this and other CADD training courses, publications, videos, and Frequently Asked Questions, visit the Engineering/CADD Systems Office of the Florida Department of Transportation on the world-wide web at http://www.dot.state.fl.us/ecso/

TABLE OF CONTENTS

1 CREATION OF FDOT CADD PROJECT (DIRECTORY TREE) 1-1

OBJECTIVES 1-1
INTRODUCTION 1-1
FDOT MENU CREATE FILE/PROJECT TOOL 1-2
Exercise 1.1 To Create FDOT CADD Project Using Create File/Project 1-4
MICROSTATION MANAGER 1-8
Exercise 1.2 To Create FDOT CADD Project Using MicroStation Manager 1-9

2 MICROSTATION WORKSPACE 2-1

OBJECTIVES 2-1
INTRODUCTION 2-1
DESIGN FILES 2-1
STARTING MICROSTATION 2-2
MICROSTATION MANAGER 2-3
File Right Click Menu Options 2-3
Directory Menu Options 2-4
WORKSPACE COMPONENTS 2-5
OPENING DRAWINGS FROM MICROSTATION MANAGER 2-6
OPENING DRAWINGS FROM THE EDITING ENVIRONMENT 2-7
LEVEL MANAGER 2-7
BY LEVEL SYMBOLOGY 2-9
LEVEL DISPLAY 2-9
SORTING LEVELS 2-10
Sorting the Level List by Headings 2-11
Applying Filters 2-12
CREATING FILES FROM THE FDOT MENU 2-13
Create File / Project Dialog 2-14
FDOT SEED FILES 2-15
Working Units 2-16
DESIGN FILE SETUP 2-17
COMPRESSING DESIGN FILES 2-18
Saving Drawings 2-19
Exercise 2.1 Creation of RW Main File 2-20
Exercise 2.2 Invoke RW FDOT Menu 2-25
Exercise 2.3 Relocate FDOT Menu 2-28

3 GEOPAK MAPPING PROCEDURES 3-1

OBJECTIVES 3-1
INTRODUCTION 3-1
SETTING GEOPAK USER PREFERENCES 3-2
Feature and COGO Preferences 3-4
CREATING/ACCESSING A GEOPAK PROJECT 3-5
INPUT AND VISUALIZATION OF GEOMETRY DATA 3-6
Coordinate Geometry (COGO) 3-6
File Commands 3-8
Edit Commands 3-9
Element Commands 3-10
View Commands 3-17
Tools Commands 3-18
COGO Visualization Using the FDOT2008 SMD Database 3-21
Navigator > Select Tools 3-22
Navigator > Tools 3-23
Storing Parcels 3-25
Various Parcel Key-In Commands 3-25
COGO Method 3-27

Map Check 3-28
Graphical COGO 3-29
Exercise 3.1 Using GEOPAK COGO 3-34

4 RIGHT OF WAY LEGAL DESCRIPTION EDITOR 4-1

OBJECTIVES 4-1
INTRODUCTION 4-1
COGO LEGAL DESCRIPTION COMMAND 4-1
ACCESSING LEGAL DESCRIPTION EDITOR 4-3
GLOBAL SETTINGS 4-7
LIBRARY SETTINGS 4-7
EDITING LEGAL DESCRIPTION LIBRARY 4-11
INSERTING PHRASES 4-13
Exercise 4.1 COGO Legal Description Command 4-17
Exercise 4.2 Legal Description Editor (Optional) 4-19
Exercise 4.3 Writing a Legal Description (Optional) 4-24

5 DESIGN AND COMPUTATION MANAGER 5-1

OBJECTIVES 5-1
INTRODUCTION 5-1
ACCESSING THE D & C MANAGER 5-3
Operational Mode - Design 5-5
Exercise 5.1 Design & Computation Manager – Survey Baseline 5-8
Exercise 5.2 Design & Computation Manager – TRACT D 5-11

6 CREATE RIGHT OF WAY ANNOTATION BY METHODS 6-1

OBJECTIVES 6-1
INTRODUCTION 6-1
ACCESSING GEOPAK'S PLAN VIEW LABELER 6-1
GEOPAK PLAN VIEW LABELER OVERVIEW 6-3
Text Tab 6-4
Params. Tab 6-6
Shape Tab 6-7
Leader Tab 6-8
Rotate Tab 6-8
Styles Tab 6-9
Plan View Labeler Menus 6-10
DP STATION/OFFSET 6-15
Exercise 6.1 Partial Parcel Labeling 6-16

7 RIGHT OF WAY FDOT MENU 7-1

OBJECTIVES 7-1
INTRODUCTION 7-1
FDOT MENU ADVANTAGES 7-1
FDOT MENU STANDARD CONFIGURATION 7-1
Getting Started 7-2
Executing FDOT Menu Commands 7-3
Help Documentation Link 7-3
STANDARD FDOT MENU 7-4
Standard Menu 7-4
CellApps Menu 7-5
Actions Menu 7-5
FDOT Menu Command Buttons 7-6
Run Plotscale 7-6
QC Quick 7-6

Show Command List 7-7
Open Browser 7-10
Label Sheets (Sheet Navigator) 7-10
RIGHT OF WAY FDOT MENU 7-11
View Levels *7-12*
RW Attachments *7-13*
FDOT Color Table 7-13
Exercise 7.1 Procedure for Changing Discipline Menus 7-16
Exercise 7.2 FDOT Menu QC Quick Command Button 7-18
Exercise 7.3 FDOT Menu Hot List Hot Box 7-20

8 RIGHT OF WAY LINE STYLE TOOLS 8-1

OBJECTIVES 8-1
INTRODUCTION 8-1
STANDARD MICROSTATION LINES 8-2
Line Styles *8-2*
Line Weights *8-2*
RW CUSTOM LINE STYLES 8-3
SET CUSTOM LINE STYLE SCALE 8-5
FDOT Menu Method *8-5*
SETTING BYLEVEL LINE STYLE SYMBOLOGY 8-7
Right of Way FDOT Menu Method *8-7*
MicroStation Methods *8-9*
Active Level Pull-Down Method 8-9
Level Manager Method 8-10
Active Filter Pull-Down Method 8-12
MODIFY CUSTOM LINE STYLES 8-15
Right of Way FDOT Menu Tools *8-15*
Shift Custom Line Style 8-16
Scale Custom Line Style 8-17
Scale ALL Custom Line Styles 8-19
Set Custom Line Style Scale 8-20
MicroStation Tools *8-20*
LEADER LINES, TIE LINES AND STATION/OFFSET LINES 8-21
Exercise 8.1 Finish Placing Custom Line Styles 8-22

9 RIGHT OF WAY TEXT TOOLS 9-1

OBJECTIVES 9-1
INTRODUCTION 9-1
SET TEXT SIZE 9-1
FDOT Menu Method *9-1*
MicroStation Method *9-3*
TEXT SETTINGS 9-4
Text Toolbox *9-4*
PLACING SPECIAL CHARACTERS 9-8
TEXT EDITOR 9-9
MODIFY TEXT 9-11
Find/Replace Text *9-14*
GEOPAK LABELER (ACTIVATION ONLY) 9-15
TEXT "MASKING" AND SELECT BY ATTRIBUTES 9-15
Exercise 9.1 Finish Placing Text 9-18

10 RIGHT OF WAY CELL TOOLS 10-1

OBJECTIVES 10-1
INTRODUCTION 10-1
CELLS 10-1
SET CELL SCALE 10-2
Right of Way FDOT Menu Method 10-2
MicroStation Methods 10-3
Place Active Cell Method 10-3
Active Scale Key-in Method 10-3
RW CELL LIST 10-4
CELL SELECTION AND PLACEMENT 10-6
FDOT Menu Method 10-6
MicroStation Method 10-8
NORTH ARROW 10-11
PLACE SPRING LINE (MACRO) 10-11
PLACE BAR SCALE 10-13
MONUMENTS 10-14
CURVE DATA 10-14
LAUNCH GEOPAK CURVE CALCULATOR 10-15
CELL "MASKING" AND SELECT BY ATTRIBUTES 10-16
Exercise 10.1 Finish Placing Cells 10-19

11 RIGHT OF WAY ARROW TOOLS 11-1

OBJECTIVES 11-1
INTRODUCTION 11-1
RW CUSTOM LINE STYLES WITH ARROWS 11-1
SET CUSTOM LINE STYLE SCALE 11-3
FDOT Menu Method 11-3
MicroStation Key-in Method 11-4
REVIEW RIGHT-OF-WAY ARROW TYPES 11-6
PLACE DELINEATORS 11-8
REVIEW RIGHT-OF-WAY TERMINATOR TYPES 11-11
Exercise 11.1 Finish Placing Custom Line Styles 11-13

12 RIGHT OF WAY FILE REFERENCING 12-1

OBJECTIVES 12-1
INTRODUCTION 12-1
ACCESSING THE REFERENCES DIALOG 12-1
MICROSTATION REFERENCES DIALOG 12-3
Integrated tool box and Pull down Commands 12-3
Reference toggles 12-4
ATTACHING REFERENCE FILES 12-6
REFERENCE MODIFICATION TOOLS 12-13
UPDATE SEQUENCE 12-14
Exercise 12.1 RW Reference Files 12-15

13 RIGHT OF WAY SHEET 13-1

OBJECTIVES 13-1
INTRODUCTION 13-1
ACCESSING GEOPAK'S PLAN & PROFILE SHEET COMPOSITION 13-1
ACCESSING THE MAIN DIALOG 13-3
Sheet Library 13-3
Main Menu Bar Overview 13-4
File Menu 13-4

View Menu 13-5
Settings Menu 13-6
Tools Menu 13-6
Dialog Icons *13-9*
Sheet Name Selector and Plot Scale *13-9*
PRIMARY WORK FLOW 13-10
Use Current Design File *13-10*
SHEET COMPOSITION 13-11
By Begin Station/Overlap Option *13-11*
By Station Range: Inside Out Option *13-14*
By Station Range: Outside In Option *13-16*
By Station: Radial Option *13-17*
Exercise 13.1 Creating RW Detail Sheets 13-19

14 RIGHT OF WAY SHEET LABELING 14-1

OBJECTIVES 14-1
INTRODUCTION 14-1
INITIALIZING SHEET NAVIGATOR 14-1
SHEET NAVIGATOR BASICS 14-3
Navigator Tab *14-3*
Menu Selections *14-4*
Sheet Edit Tab *14-4*
Exercise 14.1 Using Sheet Navigator 14-5

15 RIGHT OF WAY MAP SHEETS 15-1

OBJECTIVES 15-1
INTRODUCTION 15-1
RW MAP SHEETS FROM TABLISTS 15-2
RW MAP SHEETS FROM FDOT MENU 15-2
RW SHEET CELLS 15-5
RW COVER SHEET WITH MAP (DGN) 15-10
Exercise 15.1 Create RW Map Cover Sheet With Map (DGN) 15-12

16 RIGHT OF WAY CERTIFICATION NOTES, GENERAL NOTES, & LEGEND 16-1

OBJECTIVES 16-1
INTRODUCTION 16-1
RW CERTIFICATION NOTES 16-2
RW Certification Note Examples *16-5*
Text Import Settings *16-9*
New Certification Note *16-10*
Edit Certification Note *16-14*
RW GENERAL NOTE 16-15
RW LEGEND 16-16
Exercise 16.1 Placing and Editing RW General Notes and Legend 16-17
Exercise 16.2 Using RW Certification Notes 16-21

17 RIGHT OF WAY TAB SHEET CREATION 17-1

OBJECTIVES 17-1
INTRODUCTION 17-1
CREATION OF THE RW TAB DGN FILE 17-1
PLACEMENT OF THE RW TAB SHEET CELL 17-3
RW Tabulation Sheet 17-3
RW Tab Sheets (Axiom) 17-3
IMPORTING INTO A RW TAB SHEET CELL 17-6
Edit Excel Sheet (RWTABULATION) (Axiom) 17-6
Edit GEOPAK Form (RWTABENG) 17-8
Exercise 17.1 The RW Tab Sheet 17-9

18 RIGHT OF WAY QA/QC TOOLS 18-1

OBJECTIVES 18-1
INTRODUCTION 18-1
STANDARD RW SYMBOLOGY 18-1
FDOT QC SOFTWARE 18-1
Accessing QC Tools 18-2
Load QC Tool Box 18-3
QC Quick (Check Symbology) 18-3
Working with **QC Quick** 18-5
QC Batch (QC Reporting) 18-8
Working with QC Batch Report 18-8
Exercise 18.1 Using RW QA/QC Tools 18-12
Exercise 18.2 Using RW QA/QC Tools 18-15

19 RIGHT OF WAY PLOT FILES 19-1

OBJECTIVES 19-1
INTRODUCTION 19-1
MICROSTATION PLOTTING 19-1
FDOT PLT FILES 19-5
POSTSCRIPT PRINTING 19-7
PEN TABLES 19-9
BATCH PRINTING (MSBP) 19-9
Exercise 19.1 MicroStation Plotting 19-12
APPENDIX A - RIGHT OF WAY TOOLBOXES A-1
Appendix Exercise A 1 - Practice Using Toolbox Items A-6
APPENDIX B - PEDDS SIGNING & SEALING B-1
Appendix Exercise B 1 - PEDDS Signing and Sealing B-3
APPENDIX C - AUTOCAD DWG/DXF OPTIONS C-1
APPENDIX D - RIGHT OF WAY EXERCISES (Optional) D-1
Appendix Exercise D 1 - Place Custom Line Style D-1
Appendix Exercise D 2 - Shift Custom Line Style D-4
Appendix Exercise D 3 - Scale Custom Line Style D-6
Appendix Exercise D 4 - Scale ALL Custom Line Styles D-8
Appendix Exercise D 5 - Using RW Text Tools D-10
Appendix Exercise D 6 - Using RW Cell Tools D-17
Appendix Exercise D 7 - Using RW Arrow Tools D-22
APPENDIX E - CONVERTING R/W DESIGN FILES TO MICROSTATION V8 ..... E-1

1 CREATION OF FDOT CADD PROJECT (Directory Tree)

OBJECTIVES

This chapter will review a variety of ways to create a Florida Department of Transportation (FDOT) Computer Aided Design and Drafting (CADD) Project (Directory Tree):

- Create FDOT CADD Project using FDOT Menu's Create File/Project Tool
- Create FDOT CADD Project via MicroStation Manager

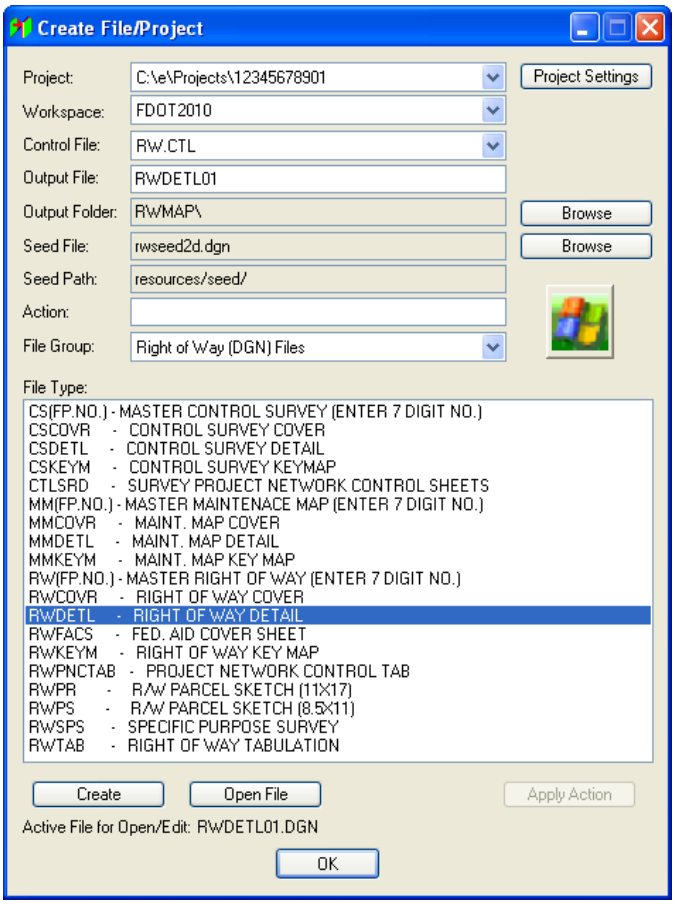
INTRODUCTION

There are a variety of ways a new FDOT CADD Project (also called a Directory Tree) can be created. Since a new FDOT CADD Project consists of a set of empty Windows folders, it can be manually created by the user using Windows Explorer. However, FDOT has provided a variety of automated tools to create a new FDOT CADD Project. This chapter will review how to use these automated tools and how to review the Windows folder structure created by these tools.

© 2015 FDOT

FDOT MENU CREATE FILE/PROJECT TOOL

The Create File/Project tool is used to create MicroStation design files, text files, etc., to standard FDOT file naming conventions. Create File/Project uses an ASCII file, called control file (*.ctl), to perform this task. Able to run from FDOT Menu within MicroStation or as a stand-alone application, Create File/Project will be used to create the Right-of-Way Key Sheet and Right-of-Way Detail Sheets using the standard FDOT file naming conventions and correct seed files. The newly created file is placed into the current working project directory folder with the option to open the file for editing.



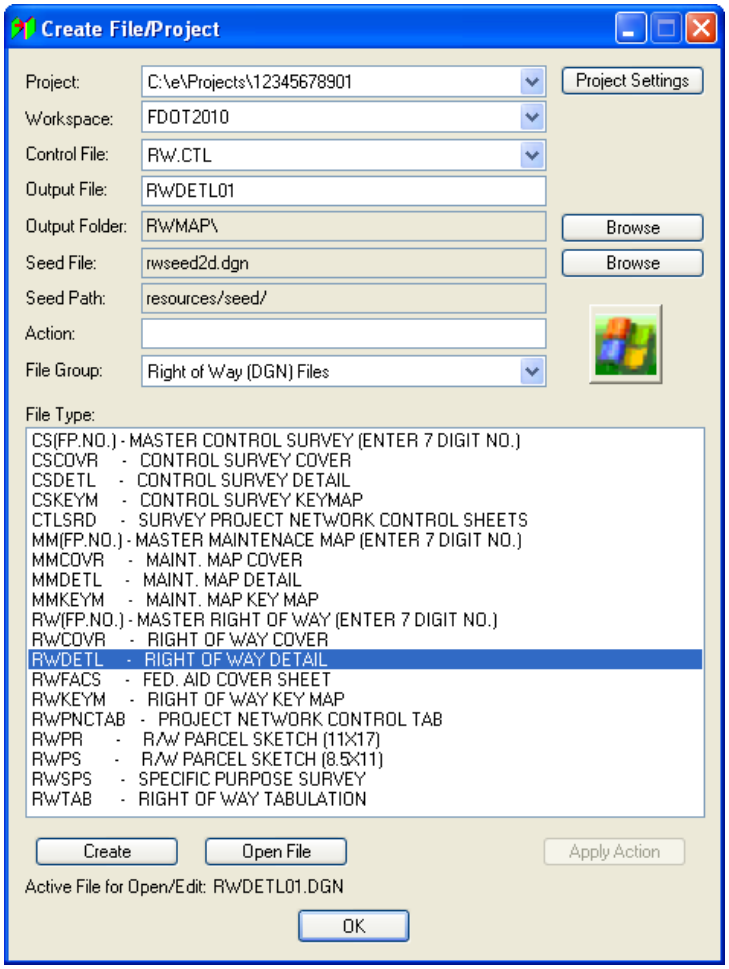
 © 2015 FDOT

- **Project** This button brings up the Project Settings dialog which allows the user to create a new project or to select an active project.
- **Control File** This button brings up a list of available control files. A variety of control files have been included in the FDOT2010 software. Each control file is grouped by the type of work. The control file is a list of all of the standard file names for a particular discipline, plus any standard text files such as input files for GEOPAK.
- **Output File** This box is automatically filled according to the selection in the File Type list. However, the user can override this by clicking the Browse button and selecting the desired file name.
- **Output Folder** *This* box is automatically filled according to the selection in the File Type list. However, the user can override this by clicking the Browse button and selecting the desired file name.
- **Seed File** This field is automatically filled in according to the selection in the File Type list. However, the user can override this by clicking the Browse button and selecting the desired seed file.
- **Seed Path** This field is automatically filled in according to the selection in the File Type list. However, the user can override this by clicking the Browse button and selecting the desired seed file.
- **Action** When the user creates a file, a program can also be initiated. Currently the user must type the desired program name. However, in future the control file will initiate the program.
- **File Group** When selected, the menu shows all of the different disciplines, categories, and file types available to the user.
- **Create** This command copies the parent file (seed*.dgn, *.inp, *.xsm, *.plt) to the current working directory and names the new file as defined in the control file. If a file exists in the current working directory with the same file name, the new file gets the next available sequence number (i.e. if dsgnrd01.dgn existed, the new file is dsgnrd02.dgn).
- **Open DGN** After a MicroStation design file has been created, this command opens the file.
- **Edit File** After a text file has been created, this command allows the user to edit the file. The user can define the Editor variable in the sitefdoteng.ucf / sitefdotmet.ucf, if necessary. Editing is not required for most files. The program uses the operating system’s standard text editor.

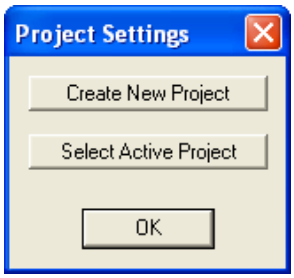
 © 2015 FDOT

Exercise 1.1 To Create FDOT CADD Project Using Create File/Project

1. From FDOT Menu, select either **Right of Way > Create Design Files** or **Utils > Create/Edit File**. As an alternative, the user can select the **Create Edit v8 Files** icon from the FDOT 2010 folder on the Windows Desktop.
2. Select the **Project Settings** button from the Create File/Project dialog.

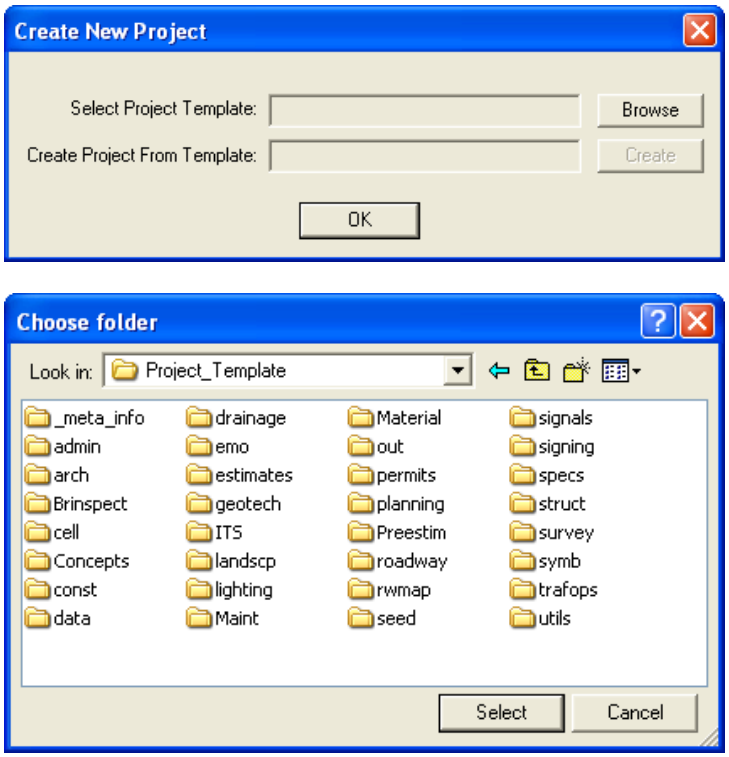


3. The Project Settings dialog will display. Select **Create New Project**.

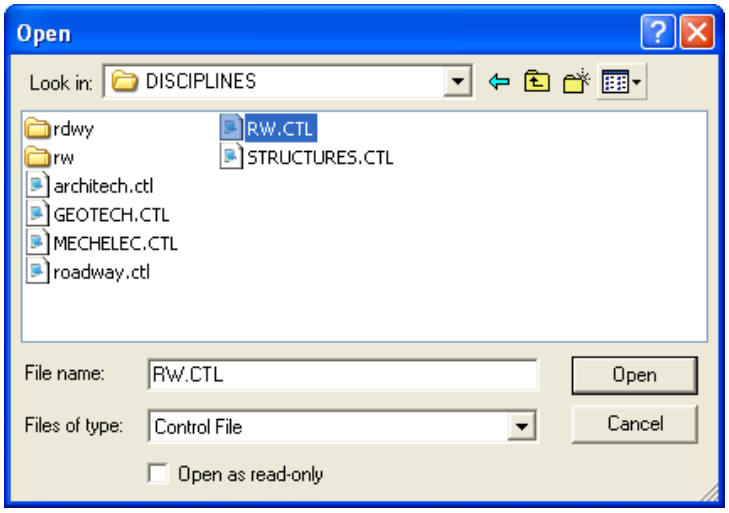


Note The C:\E\Projects directory must already exist on the hard drive before a new project can be created in the directory.

4. Select the **Project Template** (if needed) by selecting the **Browse** button. Navigate to the *C:\FDOT 2010\Project_template* folder and click **Select** to select the FDOT Project folder structure.

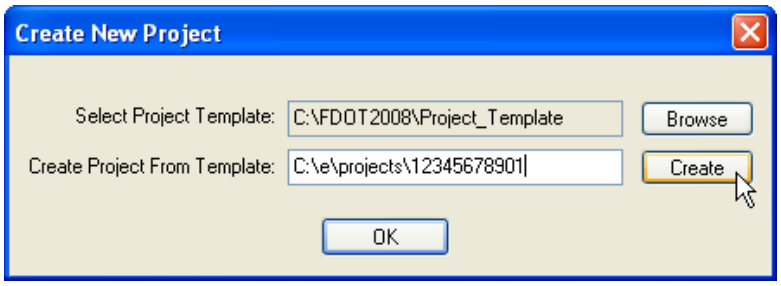


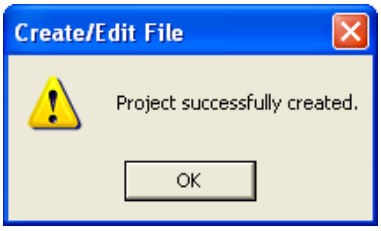
5. If needed, click the **Load Control File** button and browse to the **rw.ctl** control file in the *C:\FDOT 2010\DISCIPLINES* folder as shown below. Click **Open** to select the control file.



 © 2015 FDOT

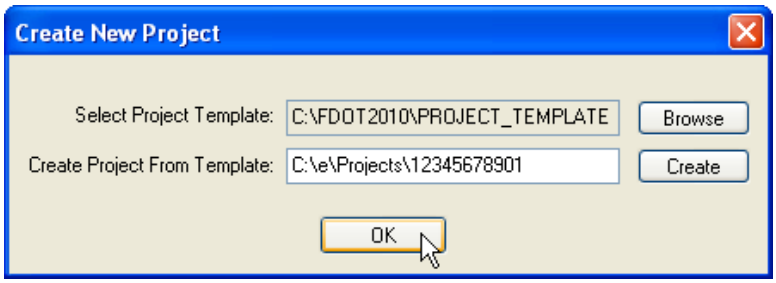
6. Type in the location and FIN Number of the new Project to be created and then click **Create** to create the new empty folder structure for the FDOT CADD Project. A confirmation dialog will be displayed. Click **OK** to close the confirmation dialog. Then click **OK** twice to close the other open dialoges.



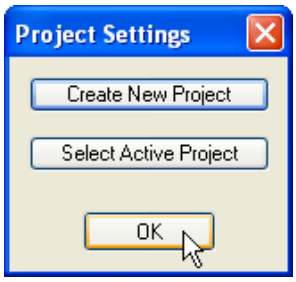


Note In most FDOT Districts, the **Project Template** location will already be filled out for the user. If not, a **Project Template** can be found in the installation directory for the FDOT 2010 CADD Software (usually C:\FDOT 2010).

7. Click **OK** to close the **Create New Project** dialog.

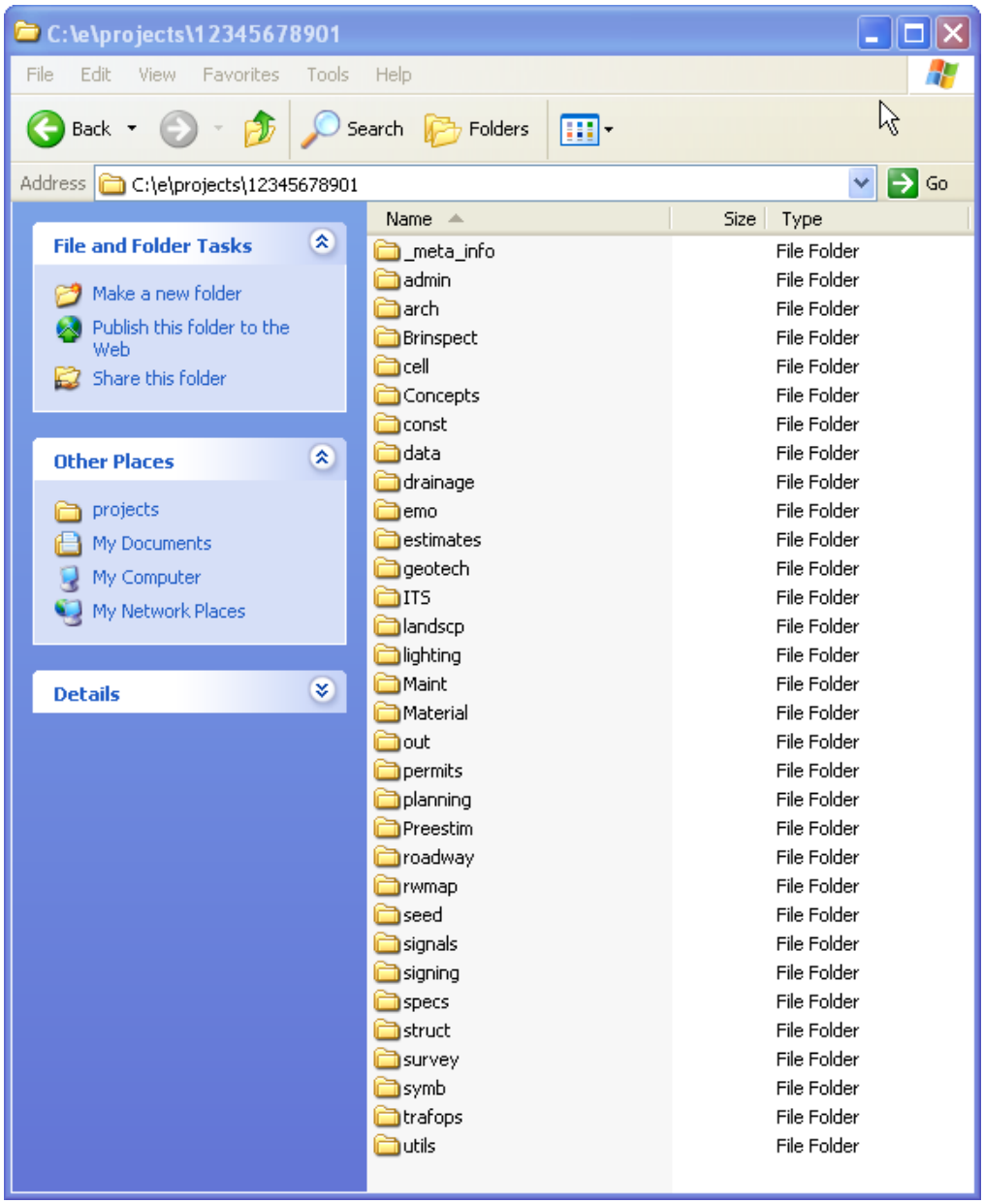


8. Click **OK** to close the Project Setting dialog



 © 2015 FDOT

9. Using Windows Explorer, verify that the new FDOT CADD Project was created.



Warning *Using Create File/Project to create a seed project does not create the* MicroStation *Project Configuration File (*.pcf) nor the PEDDS Project Identification File (ProjectID.xml). This tool simply builds the FDOT directory structure.*

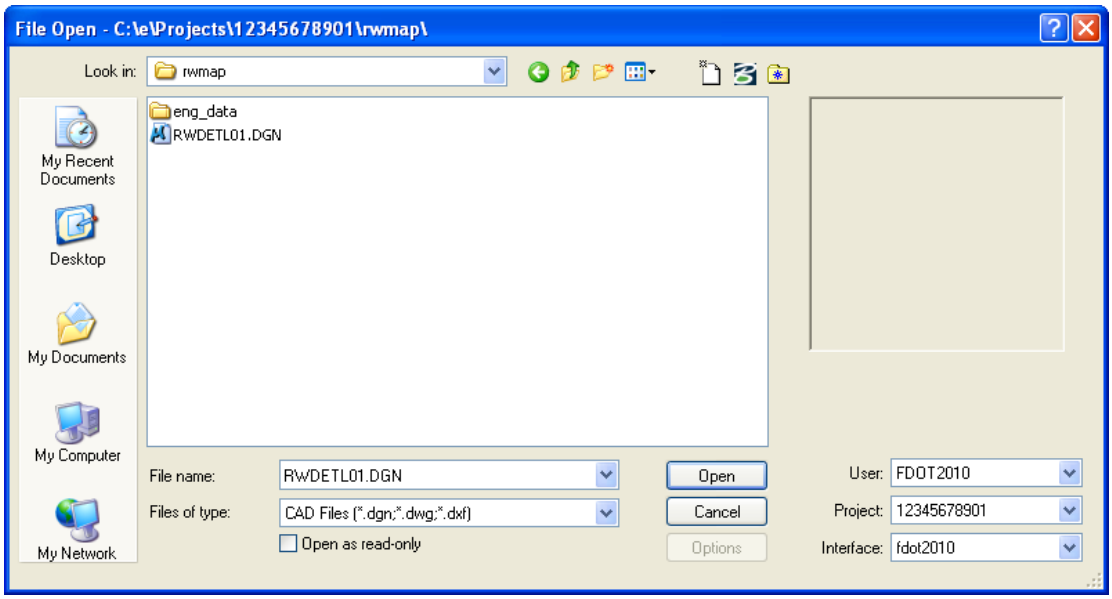
 © 2015 FDOT

MICROSTATION MANAGER

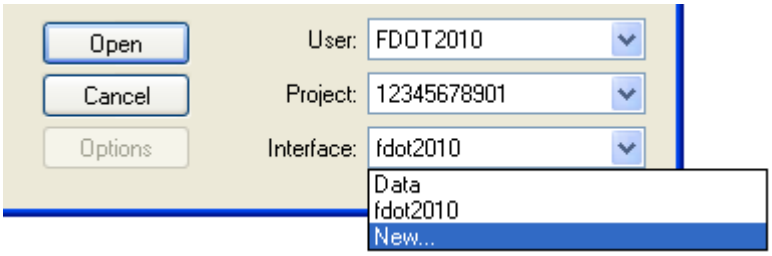
When starting MicroStation, the MicroStation Manager displays. The MicroStation Manager allows the user to perform file-related tasks, such as creating and opening drawings.

The MicroStation Manager contains standard navigation tools such as a drive list and a files list. Upon selecting a file on the left-hand side, a preview of the selected file displays on the right-hand side.

The List Files of Type option menu allows the user to filter out which types of files display in the Files list box. For example, if the user wishes to view DGN files only, change the option to MicroStation DGN Files [*.dgn]



The MicroStation **Manager** also allows the user to create a new FDOT CADD Project by Selecting the **New** option from the **Project** pull-down in the workspace section as shown next.

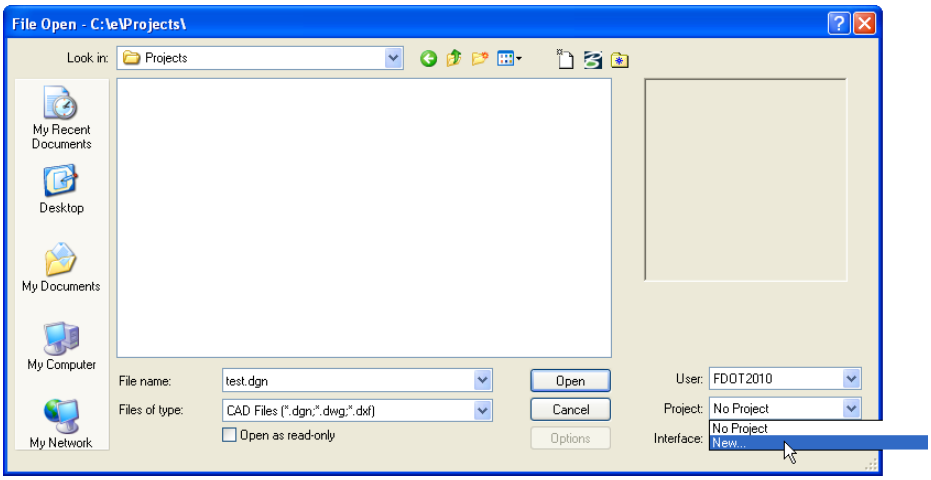


For now, the focus will be on the ability to create a FDOT CADD Project by the creation of a new **Project** component inside the MicroStation workspace portion of the MicroStation **Manager**. Other functions of the MicroStation **Manager** will be covered in detail in the next chapter of this manual.

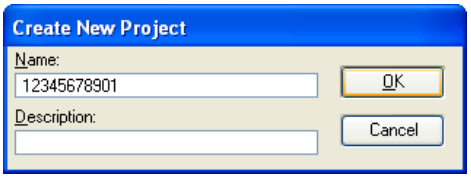
 © 2015 FDOT

Exercise 1.2 To Create FDOT CADD Project Using MicroStation Manager

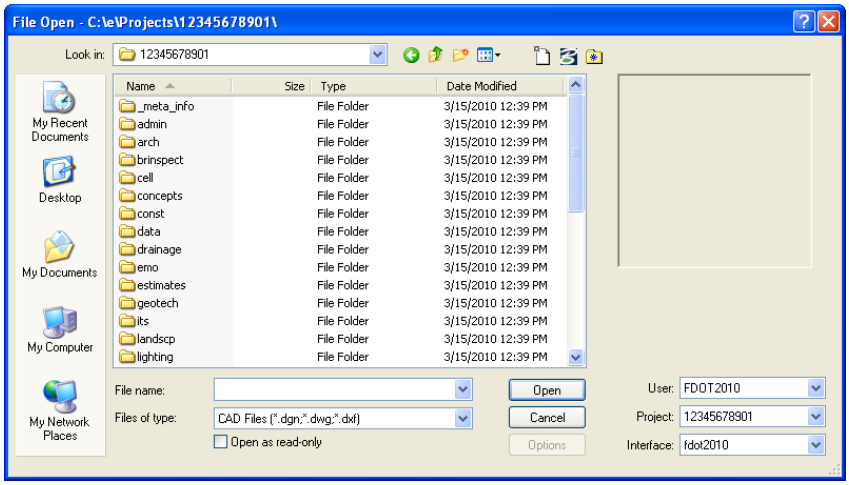
1. To create a new FDOT CADD Project, browse to the desired Project folder using the MicroStation **Manager**. Select the **New** option from the *Project* pull-down as shown.



2. This will bring up the Create New Project dialog. Enter the desired **Project FIN Number** and **Description** (optional) and then click **OK**.



3. The MicroStation **Manager** will be restored showing the newly created Project directory.



Note This method of FDOT CADD Project creation depends on a file called "project.template" existing in the Windows folder in which the user wants to create the Project. If needed, a copy of "project.template" can be found in the *C:\FDOT2010*\MicroStation*Workspace\users* folder.

Warning *Using the* MicroStation ***Manager*** *to create a seed project creates the* MicroStation *Project Configuration File (*.pcf), but does not create the PEDDS Project Identification File (ProjectID.xml). The creation of the PEDDS Project Identification File (ProjectID.xml) is covered in the next section.*

 © 2015 FDOT

2 MICROSTATION WORKSPACE

OBJECTIVES

This chapter will review the MicroStation design environment. Special consideration will be given to:

- Choosing the correct MicroStation Workspace – User, Project, and Interface
- Reviewing MicroStation Manager
- Selecting **rwmap** subdirectory
- Creating the RW Main DGN File **RW#######**.dgn
- Creating RW Detail files via FDOT Menu's
    - Right of Way > Create Design Files
    - Utils > Create/Edit File

INTRODUCTION

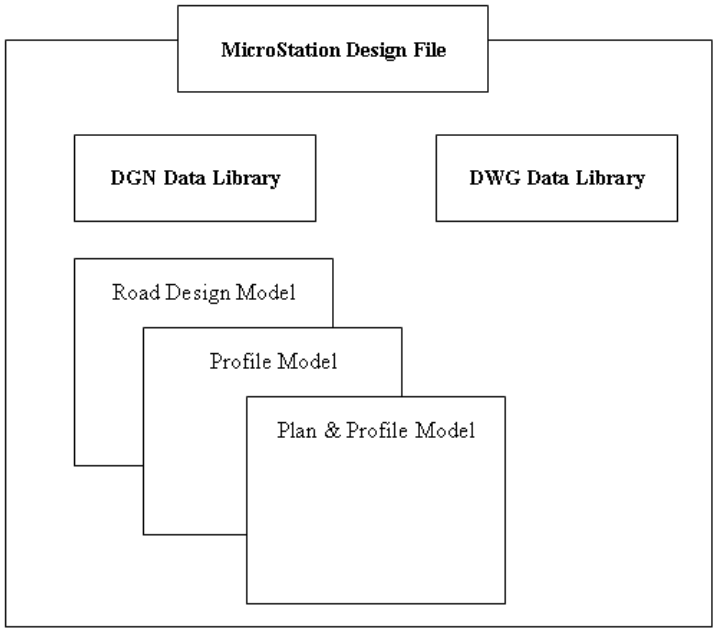
As in the past, MicroStation will be used to produce Right-of-Way Mapping Projects. The primary difference with respect to MicroStation is that the FDOT user will now use MicroStation's V8i version instead of the older V8 version.

FDOT has customized the MicroStation V8i User, Project, and Interface settings to match the particular needs of their agency. To ensure that the correct FDOT symbology and settings are reflected in any DGN files created, the user must select the correct User, Project, and Interface. This chapter will emphasize the proper procedures to select the correct options when opening and creating MicroStation V8I DGN files for Right-of-Way Mapping.

This manual is based on the 2010.00.02 version of the FDOT 2010 Software. For the most up-to-date FDOT Software version downloads see: http://www.dot.state.fl.us/ecso/downloads/software/.

DESIGN FILES

A MicroStation design file (.DGN) is a container for smaller containers called models. Each model consists of graphical elements such as arcs, lines and circles. Each model is a unique drawing within the design file, which allows the user to have multiple drawings within the same design file. For example, a design file could contain Right-of-Way, utilities, topography, and DTM all as separate models, but under a single file name. At this time, however, FDOT is only using models when processing Roadway Design cross sections.



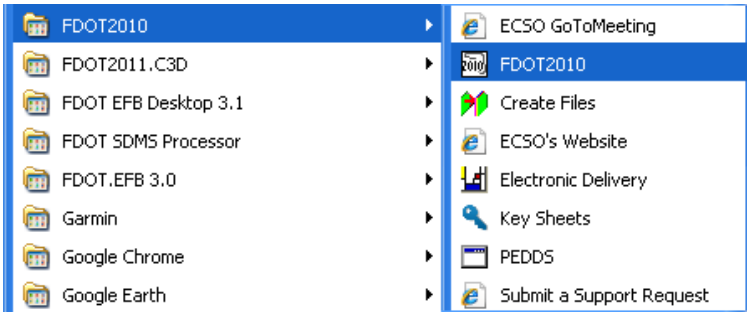
Each MicroStation Design File is created from a **seed file**. A seed file is nothing more than a previously stored design file with user specified settings that is used as a template to create a new DGN. FDOT has created seed files for use in Right-of-Way production that have standard settings stored within them.

STARTING MICROSTATION

MicroStation can be loaded from several different locations. If a shortcut has been provided on the Desktop the user can click on the FDOT2010 icon to launch.

FDOT Icon	MicroStation & GEOPAK Behavior
FDOT2010	Uses the V8i file format and FDOT2010 CADD standards.

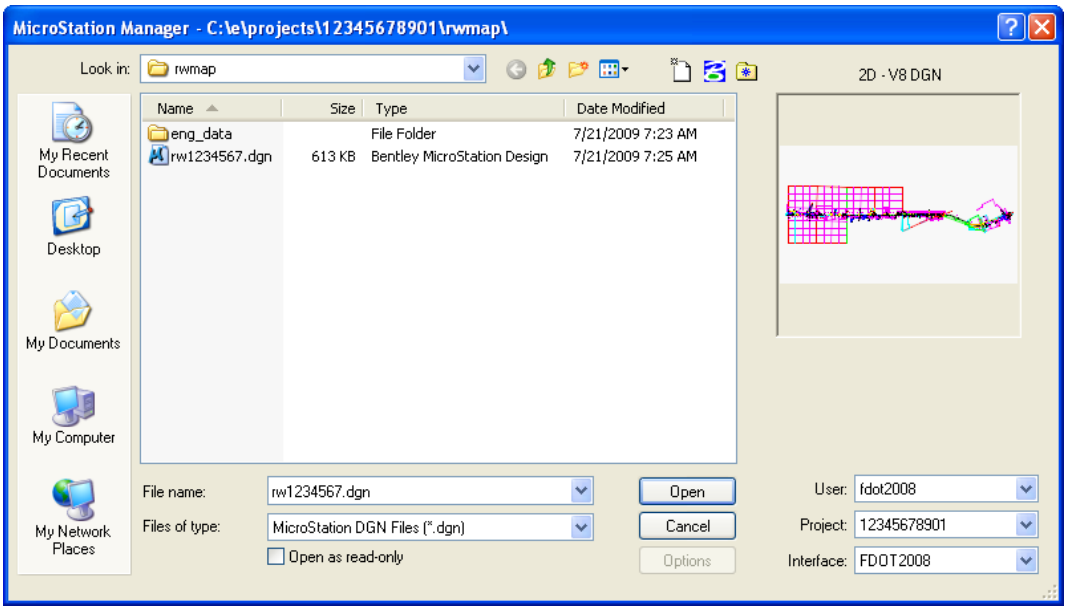
Another way to launch MicroStation is to select from the Windows Start menu, the FDOT2010 program group; then, select the FDOT2010 option. This will launch MicroStation and ensure that the correct FDOT User, Project, and Interface are used.



Warning *While there are more ways than shown above to launch* MicroStation*, the FDOT Right-of-Way Mapper should only use the two methods shown above to launch* MicroStation*. These options will ensure that the correct User, Project, and Interface are used when launching* MicroStation*.*

MICROSTATION MANAGER

When starting a MicroStation session, the MicroStation Manager displays. The MicroStation Manager allows the user to perform file-related tasks, such as creating and opening drawings.

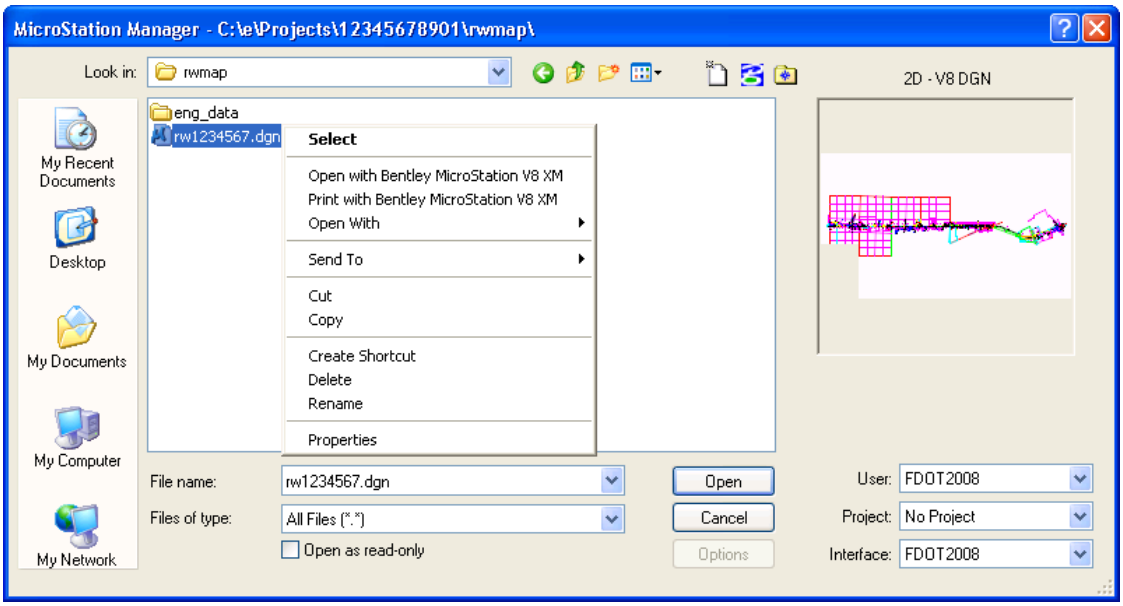


The MicroStation Manager contains standard navigation tools such as a drive list and a files list. When the user selects a file on the left-hand side, a preview of that selected file displays on the right-hand side.

The List Files of Type option menu allows the user to filter out which types of files display in the Files list box. For example, if the user wishes to view DGN files only, change the option to MicroStation DGN File [*.dgn]

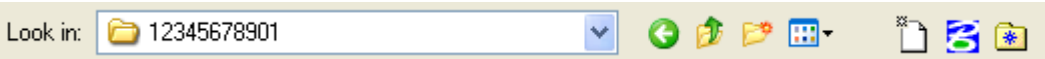
FILE RIGHT CLICK MENU OPTIONS

The File right click menu in MicroStation **Manager** contains options for opening, moving, cutting, copying, deleting, and renaming design files. It also contains options for viewing the properties of a design file.



- **Select** Opens the selected DGN.
- **Open with Bentley** MicroStation **V8i** Opens the selected DGN.
- **Print with Bentley** MicroStation **V8i** Opens the selected DGN.
- **Open With** Opens with associated Programs or allows option to select another available Program.
- **Send To** Allows file to be sent to various locations.
- **Cut** Removes file and places it to the clipboard.
- **Copy** Allows the user to create a copy of the selected design file
- **Create Shortcut** Creates a short cut to the file and places it in the current directory.
- **Delete** Deletes the selected file(s).
- **Rename** Allows the user to rename the selected design file.
- **Properties** Opens the file properties dialog

DIRECTORY MENU OPTIONS



The Directory menu in the MicroStation **Manager** dialog contains options to move back to the last folder, Move up one level, Create a New Folder, View Details, Create a New File, File Options and a Directory of Last Accessed DGNs. It also contains options to Compress a file, Upgrading an entire directory to MicroStation V8 format and set a default seed file.

Moves Back to Last Folder

Moves Up One Level

Creates a New Folder

View Detail Memu:

- ✓ Thumbnails
- ✓ Tiles
- ✓ Icons
- ✓ List
- ✓ Details

Creates a new file based on a seed file.

© 2015 FDOT

File Options:

Compress File - Removes any elements that have been deleted in previous editing sessions. This reduces the file size.

Upgrade to V8… - Allows the user to convert earlier version of MicroStation files to the V8 format. **This method does not produce the correct FDOT CADD symbology. FDOT RW Mappers should use the conversion steps as outlined by their District.**

Set default seed file – Select default seed options

Directory of Last Accessed DGNs

Note The FDOT RW Mapper should not use the **Upgrade to V8…** option.

WORKSPACE COMPONENTS

A Workspace in MicroStation is simply a collection of predefined settings and configuration variables in order to accommodate agency standards and configurations for the work environment.

A user working alone with MicroStation could conveniently set every configuration variable at the user level. Project configuration files exist in order to facilitate sharing of configurations among users in a workgroup. The settings in each user's user configuration file allow each user in a workgroup to customize MicroStation, while the shared settings of the project configuration file provide uniformity within the workgroup. The project configuration file is the file that is selected when the user selects the project component of a workspace in the MicroStation Manager dialog.

The Florida Department of Transportation has created and provided a custom Workspace in order to standardize the MicroStation environment for agency use. This Workspace helps determine how MicroStation displays on the screen and sets up certain default files and search paths.

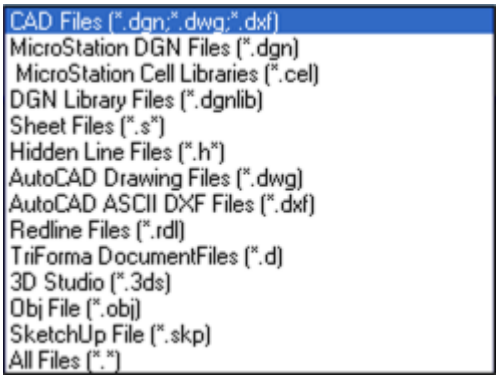
The Workspace that the Florida Department of Transportation has created is composed of 3 areas:

- **User** Set configuration variables for the user. For new projects, this should be set to FDOT 2010.
- **Project** Set variables specific to a certain project, such as where to look for files. This should be set to the current project.
- **Interface** Sets the active user interface. For new projects, this should be set to FDOT 2010.

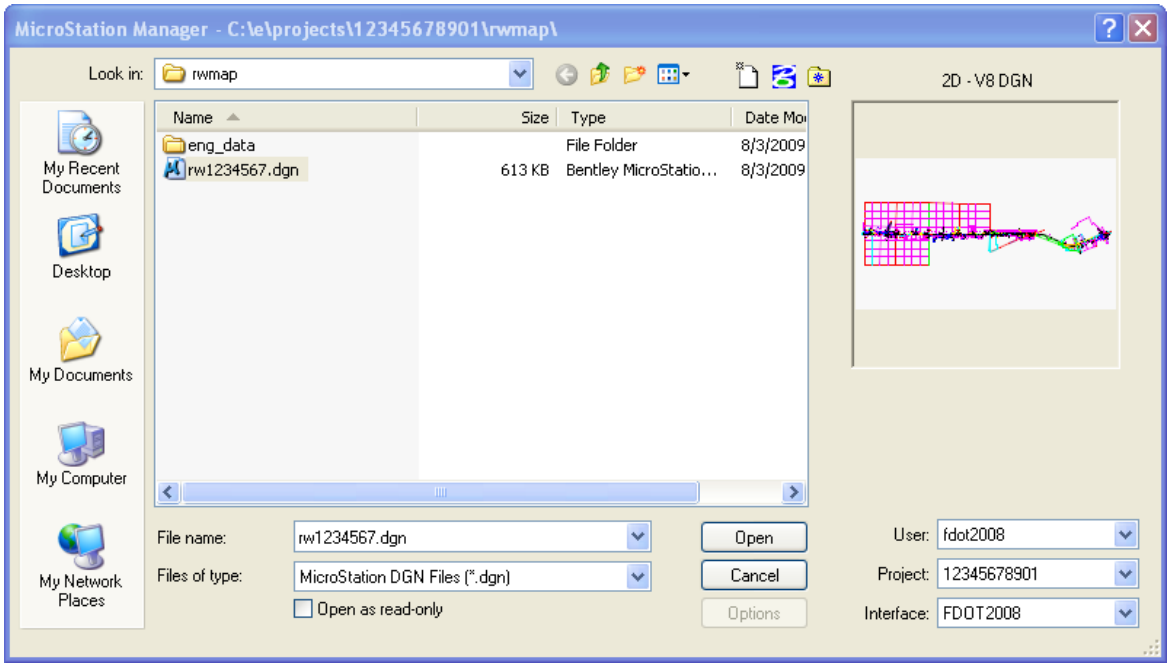
OPENING DRAWINGS FROM MICROSTATION MANAGER

MicroStation allows the user to open drawing files in several formats. The **List Files of Type** option allows the user to determine which drawing types are listed.

Choosing the CAD Files [*.dgn, *.dwg, *.dxf] option will list drawings in all three formats.



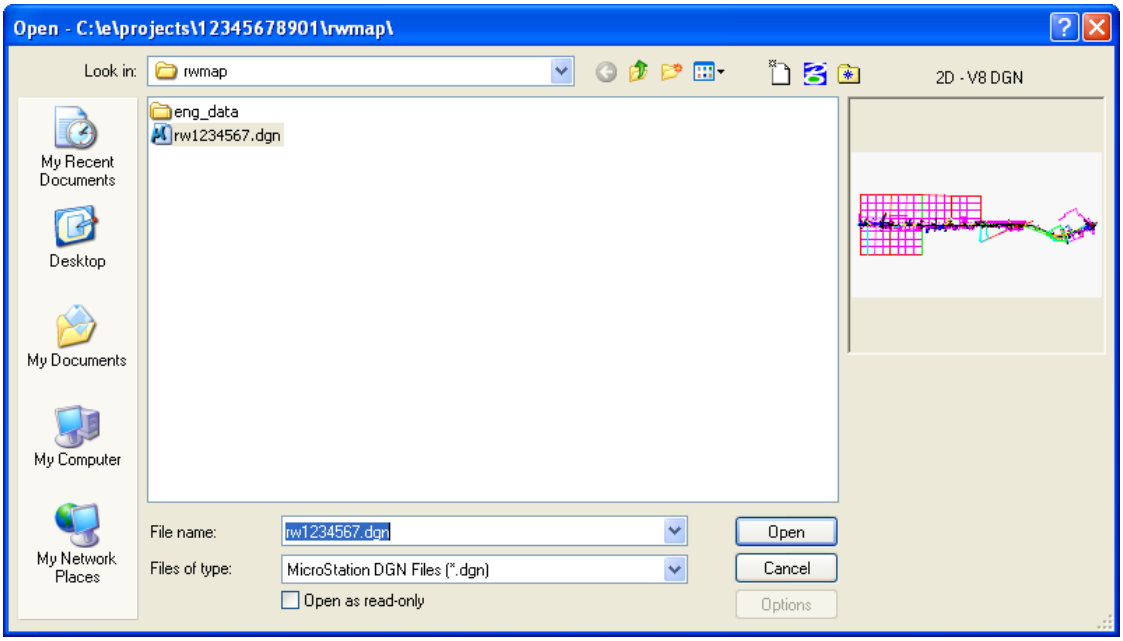
To open a drawing, navigate to the project folder and select the drawing from the list at the left and click the Open button or double-click on the drawing name.



 © 2015 FDOT

OPENING DRAWINGS FROM THE EDITING ENVIRONMENT

Once in a MicroStation file, options are provided to allow the user to switch to other DGN files. The Open tool allows the user to open and edit an existing drawing from the editing environment. It is not necessary to return to the MicroStation Manager to open another drawing.



The user can navigate to a different folder by selecting the directory tree at the right of the dialog. Many of the same options that are in the MicroStation Manager display in this dialog as well. Select a file and click the **Open** button, or double-click on a file to open it.

LEVEL MANAGER

The FDOT standard contains a large number of levels, and every level that is needed in drawing creation should already exist. Because level information is tied so closely to QC, the FDOT standard interface does not allow users to create, delete, import or export levels.

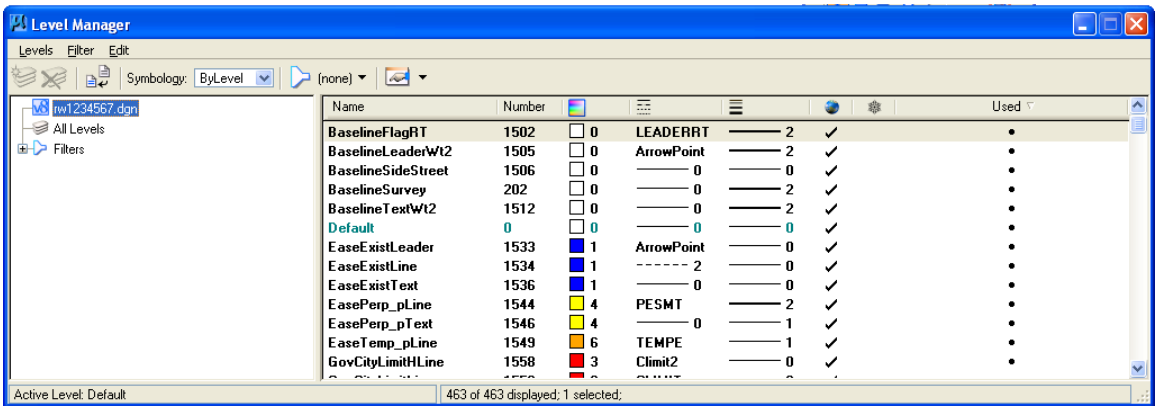
All of the levels that are present in a drawing come from an attached DGNLIB. This is a library of information. It includes level structure, filter information, and level symbology.

Some miscellaneous levels exist in the drawing for "scratch" drawing. If a new level is desired, requests for new levels are to be addressed through the user's TAC member.

Although most of the level-editing functions have been disabled, there is still a use for the **Level Manager**. The **Level Manager** can be used to freeze and lock levels. Symbology may also be edited, but if it is changed, it will revert to the original symbology the next time that the drawing is opened.

The **Level Manager** can be opened by going to the pull-down **Settings** > **Level** > **Manager** or by choosing the **Level Manager** icon from the **Primary Tools** MicroStation toolbar.

 © 2015 FDOT

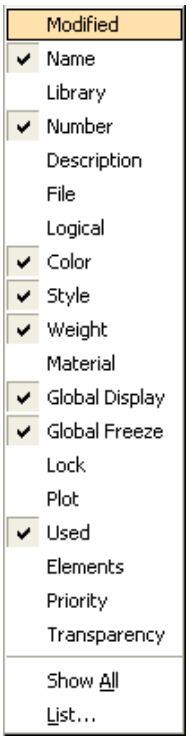


To turn off a level using the **Level Manager,** click the check mark that is next to the level name under the heading **Global Display**. This turns the level off in all views. Click the check mark again to turn the level back on.

To freeze a level using the **Level Manager**, click the check mark that is next to the level name under the heading **Global Freeze**. This turns the level off in all views. Click the check mark again to thaw the level.

To add additional columns to the **Level Manager** display, the user can right-click on top of any column to display a listing of all available columns as shown below. Checkmarks indicate that the column is already displayed.

Columns may be sorted by left-clicking on the top of any column. Sorting by the **Used** column can be very useful as all Used Levels are then grouped together in the **Level Manager** listing.



Note Turning on/off level display is basically the same as thawing /freezing levels, with one difference. When a level is frozen, any cells or references placed on that level will not be displayed, regardless of how levels are used in the elements that make up the cell or reference.

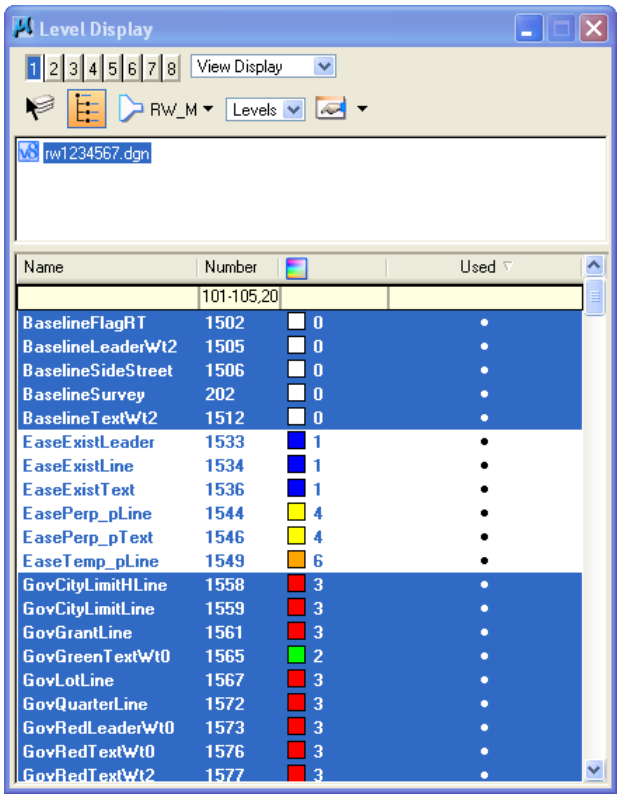
BY LEVEL SYMBOLOGY

When using MicroStation to create a FDOT drawing, the color, style and weight should be set to *By Level*. This setting allows the level to control the active color, line style, and line weight. This ensures that the levels follow FDOT standards.

The Color, Line Style, and Line Weight combo boxes each have a *ByLevel* option. This should be set as part of the seed file and not deviated from.

LEVEL DISPLAY

One of the biggest advantages of using levels in a drawing is the ability to control level display. This is done through the **Level Display** dialog. The **Level Display** dialog can be docked and resized as needed. **Level Display** can be accessed by going to **Settings>Level>Display** or by choosing the **Level Manager** icon from the **Primary Tools** MicroStation toolbar.



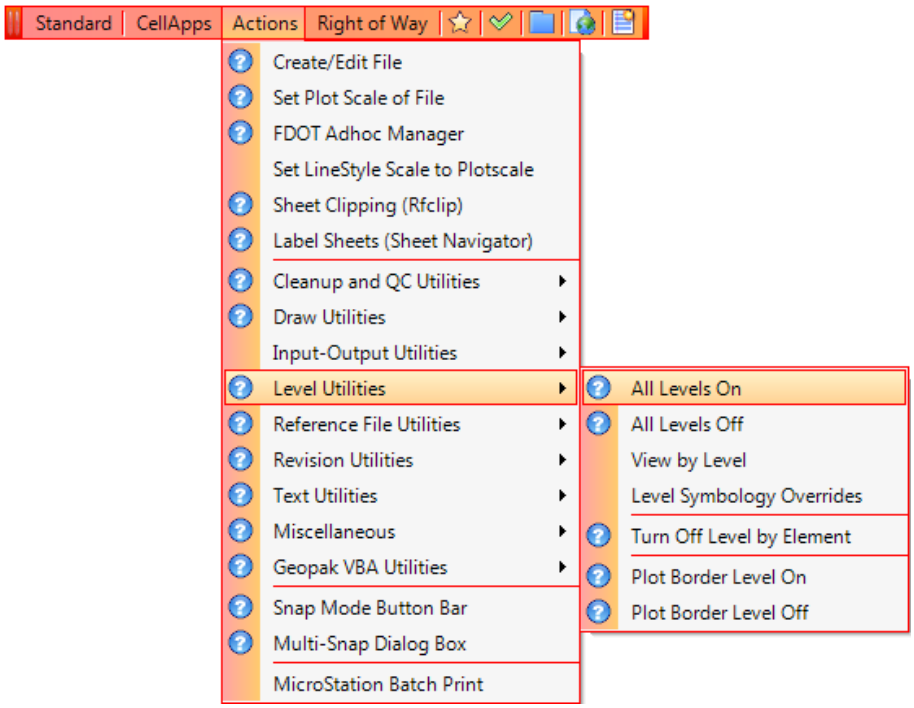
To toggle levels Off and On, simply click on the level name. A level with a black background is on, and a level with a gray background is turned off. If the level name is in bold type, it is being used in the drawing. A used level is a level with elements on it.

The Active Level has a green background. To make a level the Active Level using the **Level Display** dialog, double-click the name of the level that is to be set as the Active Level.

The View Numbers at the top of the box determine which view the levels will be turned off or on in.

The Show Target Tree button opens the file target area. This is used to turn levels off and on in reference files.

Other Level Utilities can be accessed from the FDOT Menu under the Actions pulldown.



SORTING LEVELS

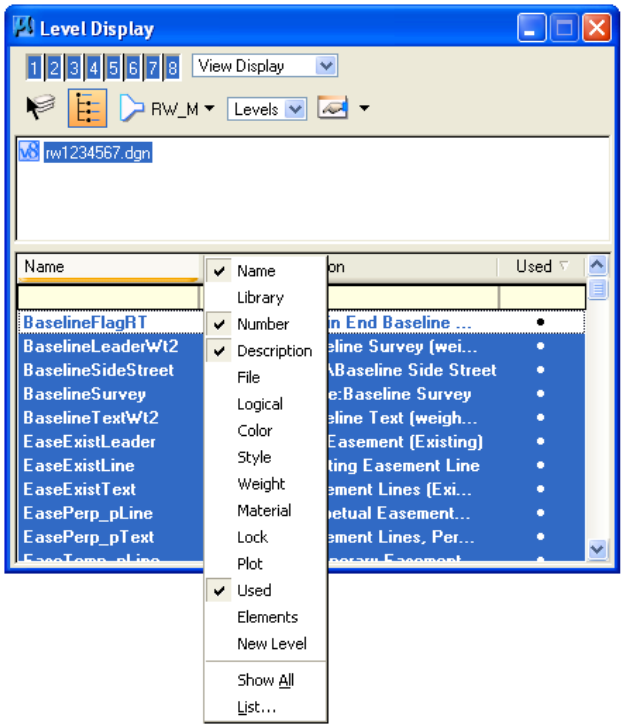
The FDOT standard has roughly 2500 levels on which elements may be placed. As a result, it becomes necessary to sort them intelligently so that the user is not overwhelmed with the sheer volume of levels.

Items in the **Level Display** dialog can be sorted by simply re-ordering the list, or applying filters.

SORTING THE LEVEL LIST BY HEADINGS

Clicking on a heading name will sort the list according to the heading selected (i.e. Number, Name, and Used). Click once to sort ascending and click a second time to sort descending.

More categories can be added by right-clicking on an existing category and choosing the category name to add from the list. The list of headings may be re-ordered by dragging a heading to a new location.

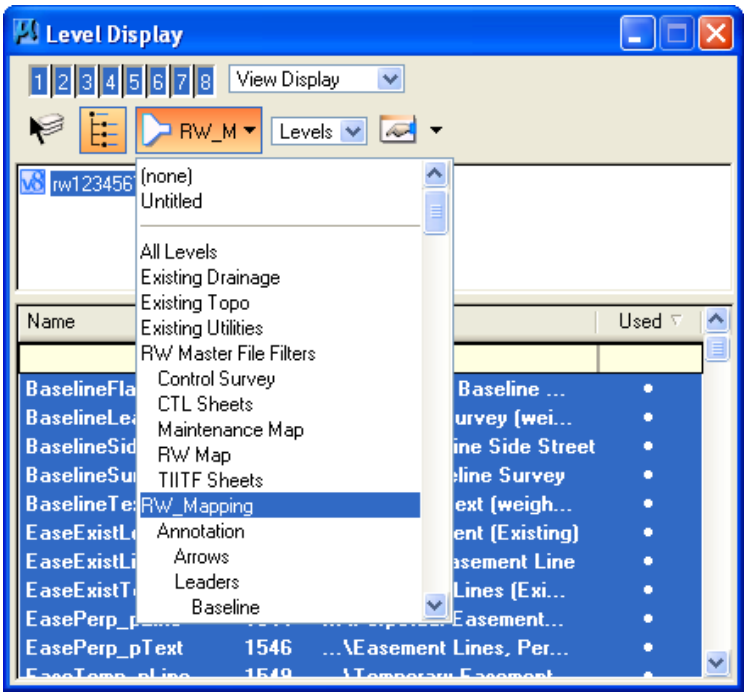


© 2015 FDOT

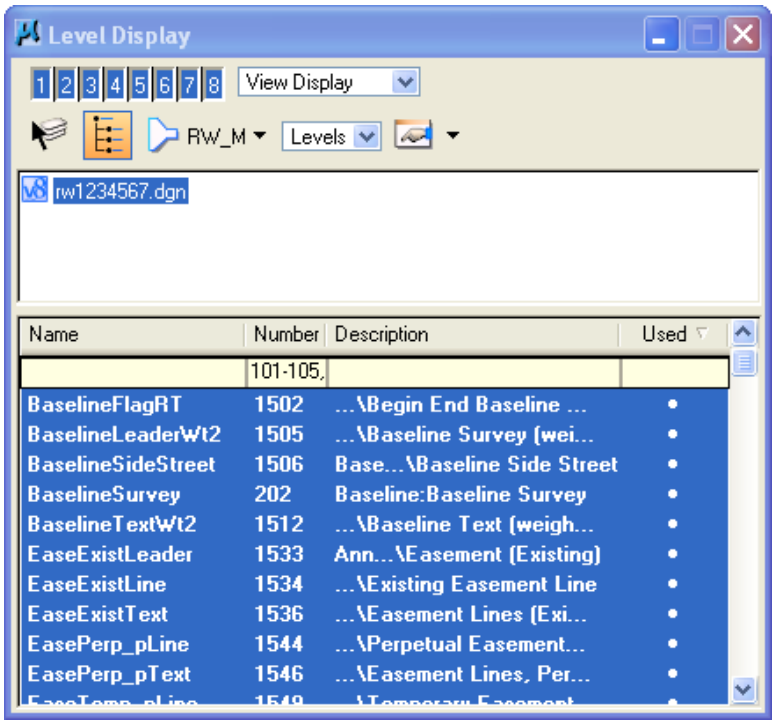
APPLYING FILTERS

Another way to sort and organize the list of levels is by using level filters. FDOT seed files have a set of filters already attached to them. These filters allow the user to see only the level names of interest.

To activate a filter, select its name from the filter drop down list.

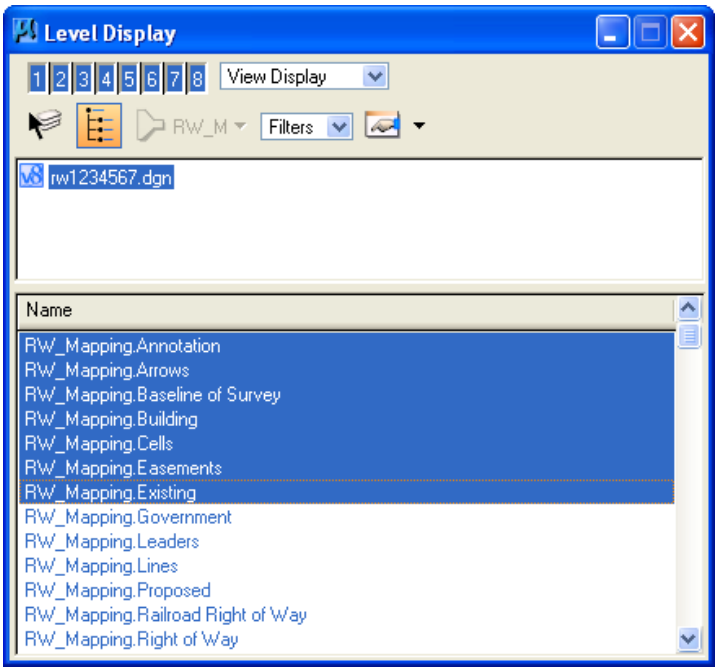


The filter drop down list is also found in the Attributes tool box. This method will display only levels matching the filter in the level list window.



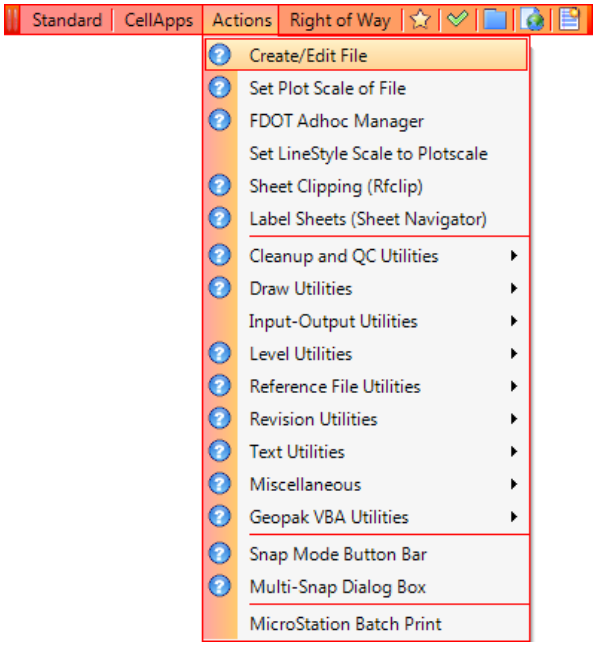
 © 2015 FDOT

The user can also change the level list to display only level filters. In this mode the user can turn levels on and off by selecting the filter. This is accomplished by changing the Level toggle to Filter at the top of the dialog.



CREATING FILES FROM THE FDOT MENU

While the standard MicroStation tools can be used to create new files, FDOT has provided a utility to create new files with correct seed file and naming structure already in place. To access this utility, select either **Right of Way > Create Design Files** or **Actions > Create/Edit File** from the FDOT Menu. This will cause the **Create File/Project** dialog to display.



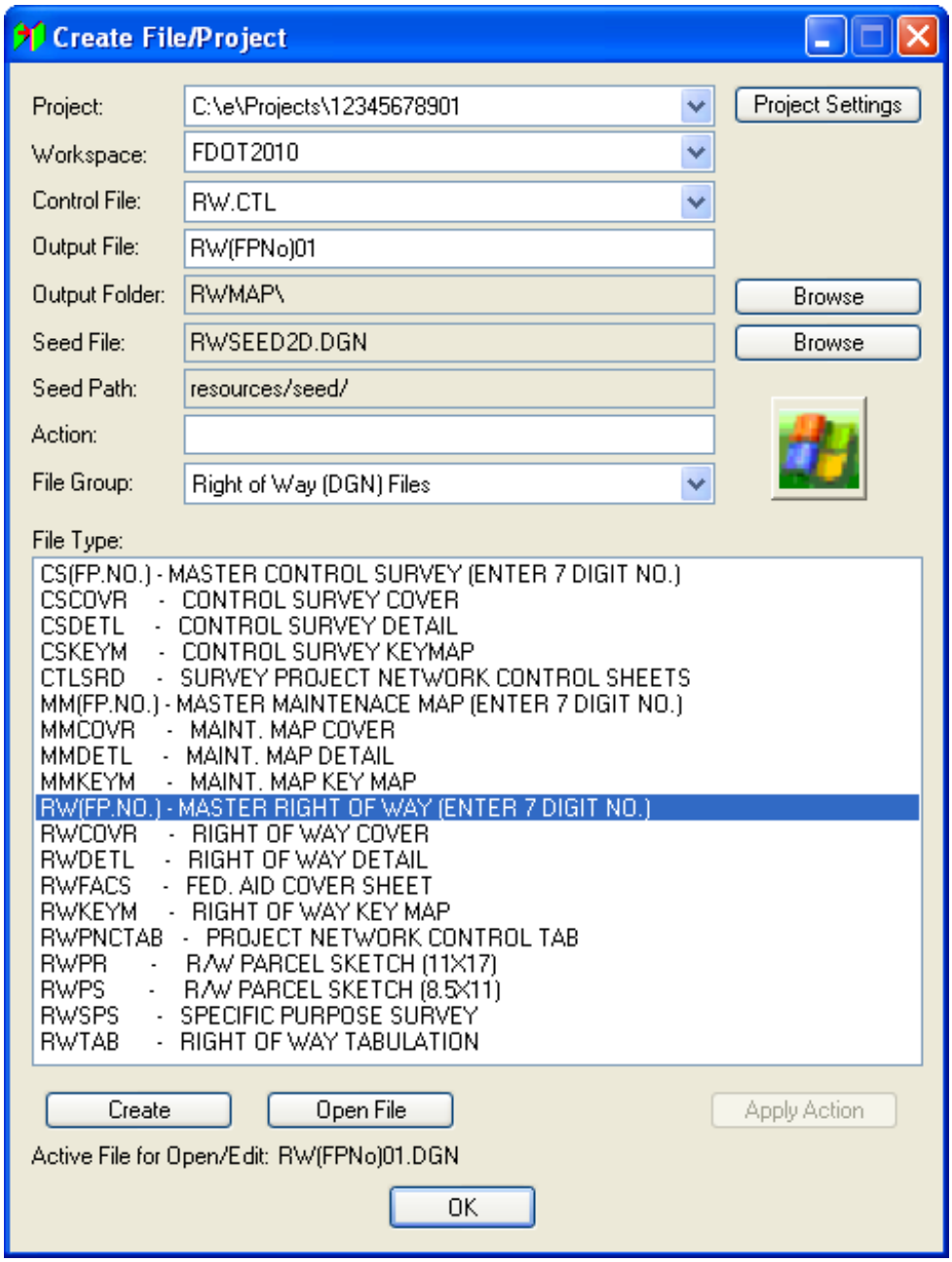
The basics steps to create a new Right-of-Way design file are:

1. Open the **Create File/Project** dialog from FDOT Menu.
2. Select the control file.
3. Select the *File Group*.
4. Select the *File Type* to create
5. Click the **Create** button

Note Clicking the **Create** button more than once will create multiple new DGN files. This is useful when the user will need more than one blank copy of a particular type of DGN file.

CREATE FILE / PROJECT DIALOG

The **Create File/Project** dialog should always be used to ensure that the files the user creates adhere to FDOT naming conventions and standards.



Note Once a DGN file has been created using **Create File/Project**, the **Open DGN** button will be available. Clicking the **Open DGN** button will open the newly created DGN file in MicroStation.

- **Project** — This is the path in which project files are created. Clicking the project settings button allows the user to select the project to use.

- **Control File** — The Load Control File button allows the user to select the control file to use. The control file sets all of the other information in the **Create File/Project** dialog. The control files are located in the *C:\FDOT2010\Group* folder. There are seven control files:

  a. MECHELEC.CTL for mechanical and electrical files.

  b. ROADWAY.CTL for roadway related files.

  c. RW.CTL for right-of-way related files.

  d. STRUCTURES.CTL for structures related files.

  e. UTILITIES-DWG.CTL for Utility DWG files.

  f. UTILITIES.CTL for Utility related files.

  g. GEOTECH.CTL for Geotechnical related files.

- **Output File**
- **Output File Folder**
- **Seed File**
- **Seed File Path**

  The settings in this area are all set by the control file, and by choosing the File Group and File Type.

- **File Group** — Each control file has several file groups to select from. Each group is a specific area of design. Choosing a file group loads the file types related to that group into the *File Type* area.

- **File Type** — Choosing a file type sets all of the settings for the *Output and Seed* section, including the name of the file to be created. If a file with the same name already exists, it is automatically incremented. The seed file and output folder will update automatically.

Note By choosing the correct Project, Control File, and File Type within the **Create File/Project** dialog, settings such as the Right-of-Way design file name and placement in the rwmap folder of the FDOT CADD Project are handled automatically for the user.

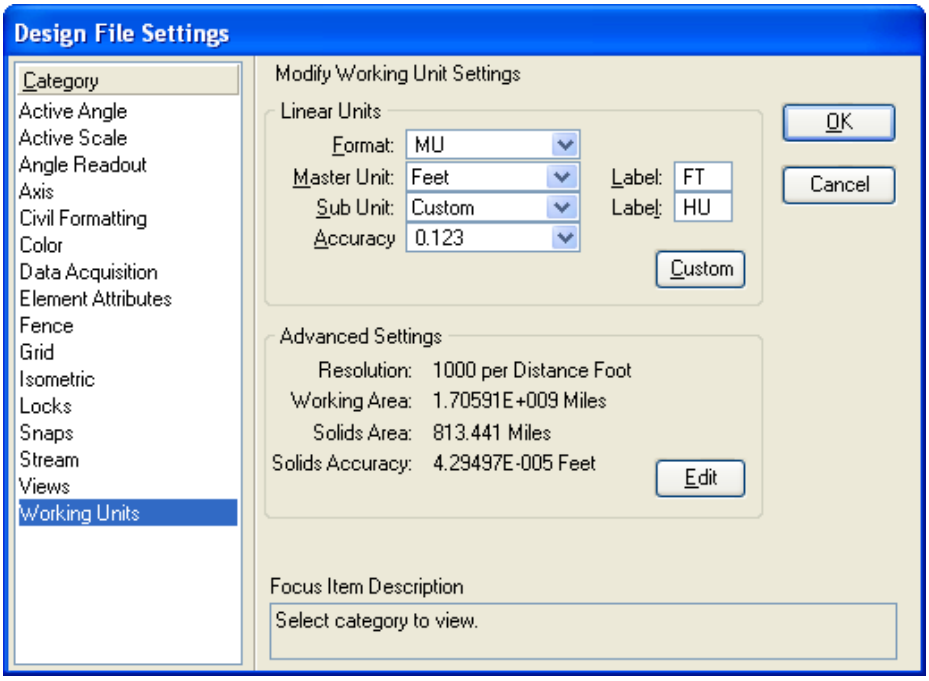
FDOT SEED FILES

Every MicroStation file uses another MicroStation file as a template for all of the settings and other information needed to create a drawing file. For the DOT's purposes, the seed files that are available are:

FDOTSEED2D.DGN	Contains all of the settings for creating a 2D design file.
FDOTSEED3D.DGN	Contains all of the setting for creating a 3D design file.
FDOTSEED2D.DWG	Contains settings for creating AutoCAD files.
FDOTSEEDXS.DGN	Contains additional models setup for cross sections.
RWSEED2D.DGN	Contains different unit settings.
STRUCTURESSEED.DGN	Contains different unit settings.

WORKING UNITS

Working units consists of controls that are used to set "real world" units of measurement for your design models. MicroStation recognizes Metric and English units, either of which may be selected from option menus. Additionally, the user can create custom units, by relating them to the standard units (Metric or English). Changing between the units used in a model makes no difference to the size of geometry in your model. Alternatively, changing the *Resolution* setting in the *Advanced* settings, does change the size of existing geometry in the model. In practice, the *Resolution* setting will rarely, if ever, have to be changed from the default.



Different Working Units can be assigned to different models, all contained in the one DGN file.

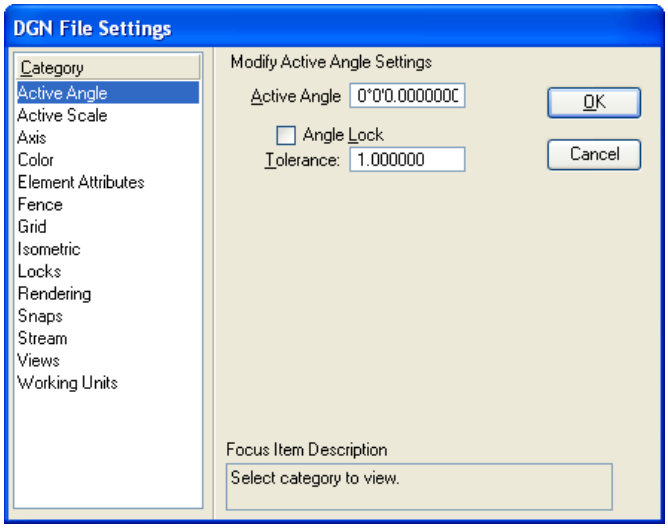
FDOT has provided seed files with settings to use standard working units according to agency specifications. When using the **Create/File Project** to create MicroStation files, the appropriate seed file is used to create each DGN file automatically.

Global Origin

The global origin for FDOT's standard seed files are set to an X,Y coordinate of 0, 0. The global origin can be relocated to specific coordinate values to create a custom coordinate system. When using the **Create/File Project** to create MicroStation files, the appropriate seed file is used to create each DGN file automatically and thus the global origin is set to FDOT specifications.

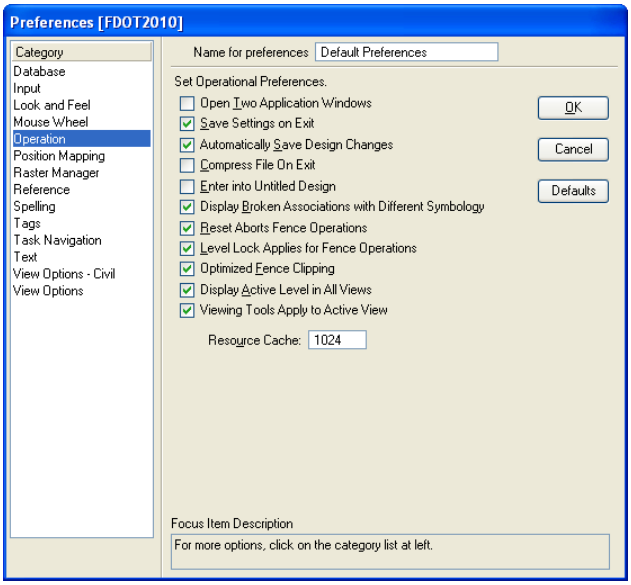
DESIGN FILE SETUP

When creating a new design, it is a good idea to review the design file parameters that control how the drawing will function. The most common file settings are found in the **DGN File Settings** dialog. This can be accessed from the **Settings** pull-down on the main MicroStation menu bar.



Note It is important to check the Design File Settings even if the user is sure that the proper seed was chosen when the MicroStation file was created, because some of the settings may have been changed by other users.

To ensure that the file settings are saved with the file, select the pull-down **(File > Save Settings)** or **(CTRL+F)** on the keyboard. This will preserve all the settings so that the next time the file is accessed it will reflect the current settings (including the last Views). The user can also select to have the settings saved automatically by selecting the **Save Settings on Exit** check box in the *Operation Category* of the **Preferences** dialog. The **Preferences** dialog is accessed by using the pull-down **(Workspace > Preferences).**



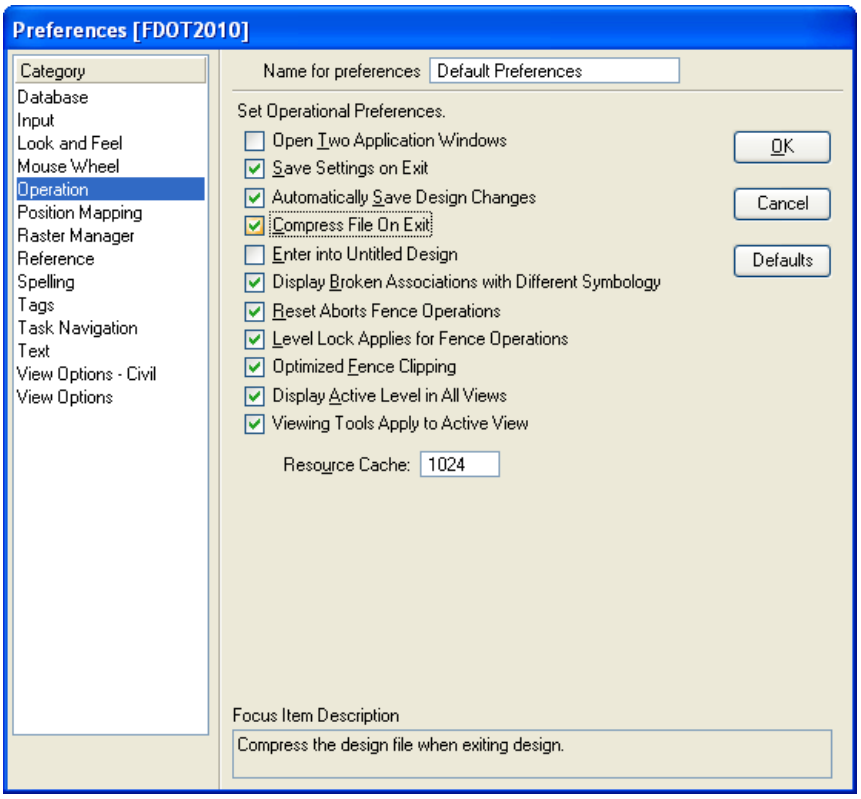
Note If the user selects **File>Save** when **Automatically Save Design Changes** is checked, the MicroStation UNDO buffer will be cleared preventing the user from undoing any operations previous to the save.

 © 2015 FDOT

COMPRESSING DESIGN FILES

When the user deletes elements from a MicroStation design file, the elements no longer display in the design, but a record of the deleted elements remains in the design file. The **Compress Design** command removes the records, which reduce the size of the file. The undo buffer is cleared when the user compresses a design, so after compressing, the user will no longer be able to undo any previous operations.

It is best to use the **Compress Design** command at the end of an editing session. This can also be set to happen automatically upon exiting the MicroStation design. To make this setting access the **Workspace** pulldown and select **Preferences** then select the **Operation** option.



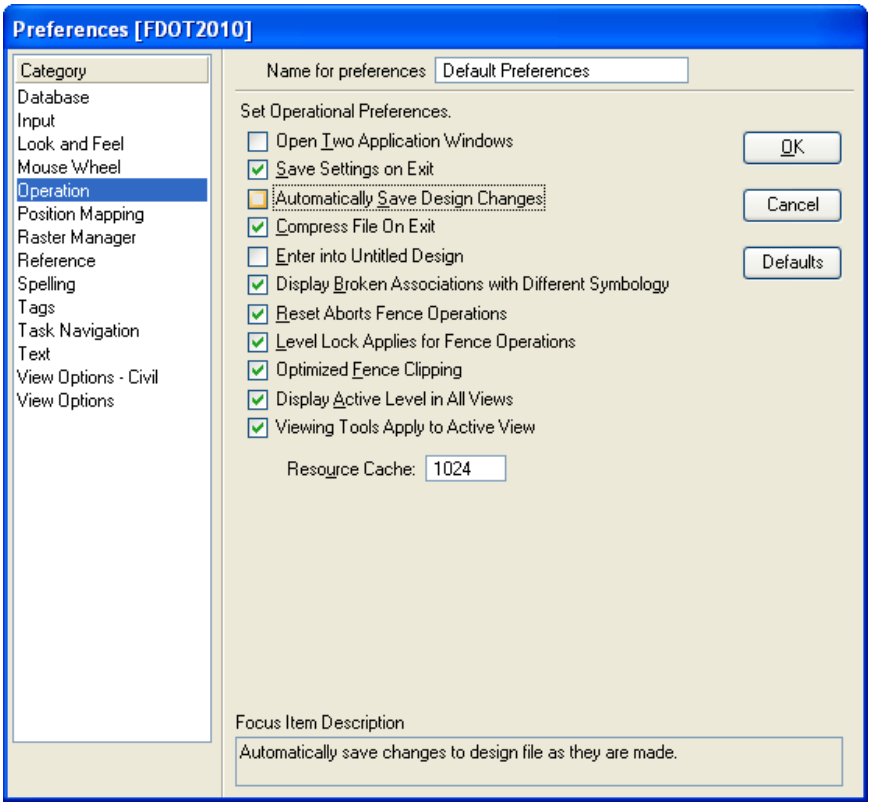
 © 2015 FDOT

SAVING DRAWINGS

By default, MicroStation saves drawing changes automatically. MicroStation DGN files are saved in the DGN format, and AutoCAD DWG files are saved in the DWG format. The fact that the file is saved automatically is a very powerful feature of the software. This gives the user the security of knowing that in the event of a computer crash or power failure, the design changes to the last completed command will have been saved.

> ***Note*** Only changes to design elements are saved automatically. Drawing settings must be saved using the **Save Settings** option.

The user can select to not have MicroStation save files automatically by clearing the check mark next to **Automatically Save Design Changes** in the **Operation Category** of the **Preferences** dialog.



If automatic save is disabled, the user must manually save the file by clicking the **Save** tool in the Standard Toolbar. By choosing **File > Save As**, the user can save the file as a V8, V7, DWG, or DXF file format.

The **Save As** command can be used to create a backup of the design; however, the F3 key creates a backup file with the same name as the active design but with the extension *.BAK*. The backup file is created in the directory specified by the MS_BACKUP configuration variable.

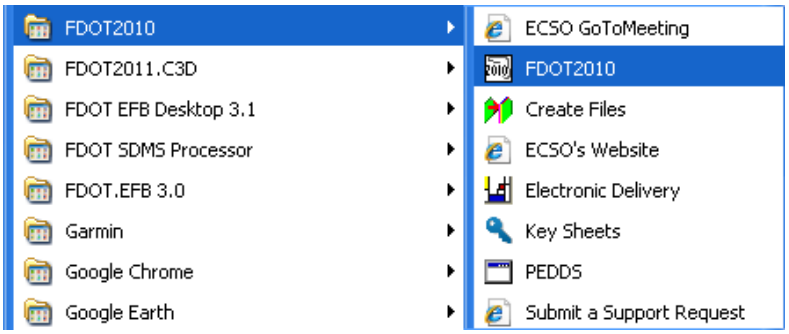
To close any open drawings and return to the MicroStation Manager, select **File > Close**.

 © 2015 FDOT

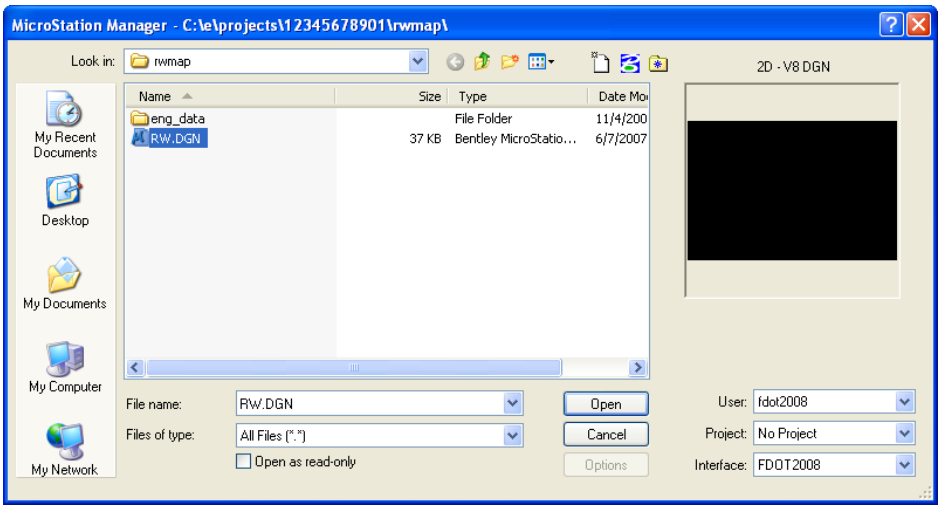
Exercise 2.1 Creation of RW Main File

➢ ***In this exercise the user will learn how to create a new FDOT RW Main File Using the Create File/Project Tool from FDOT Menu.***

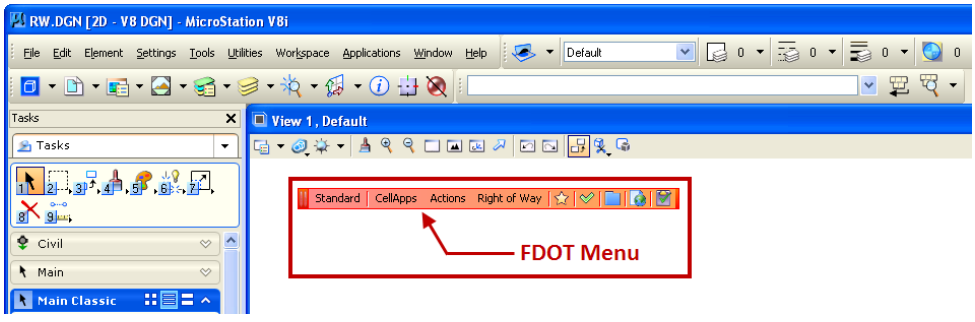
1. Open MicroStation using the FDOT2010 icon FDOT2010 on the desktop. As an alternative, launch MicroStation from the FDOT2010 folder on the Windows Start menu.



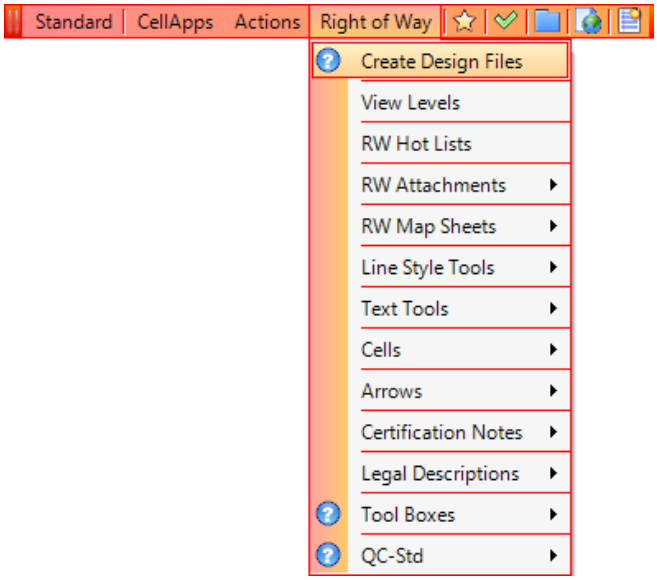
2. From the MicroStation Manager, open the file C:\E\Projects\12345678901\rwmap*RW.dgn*. This is a blank file used simply to start up MicroStation and FDOT Menu for the exercise. Ensure that the correct *User*, *Project*, and *Interface* are chosen as shown.



3. FDOT Menu will start automatically after GEOPAK is initialized. Do not worry about the location of the FDOT Menu tools for now. Moving and saving the location of the FDOT Menu will be covered later.

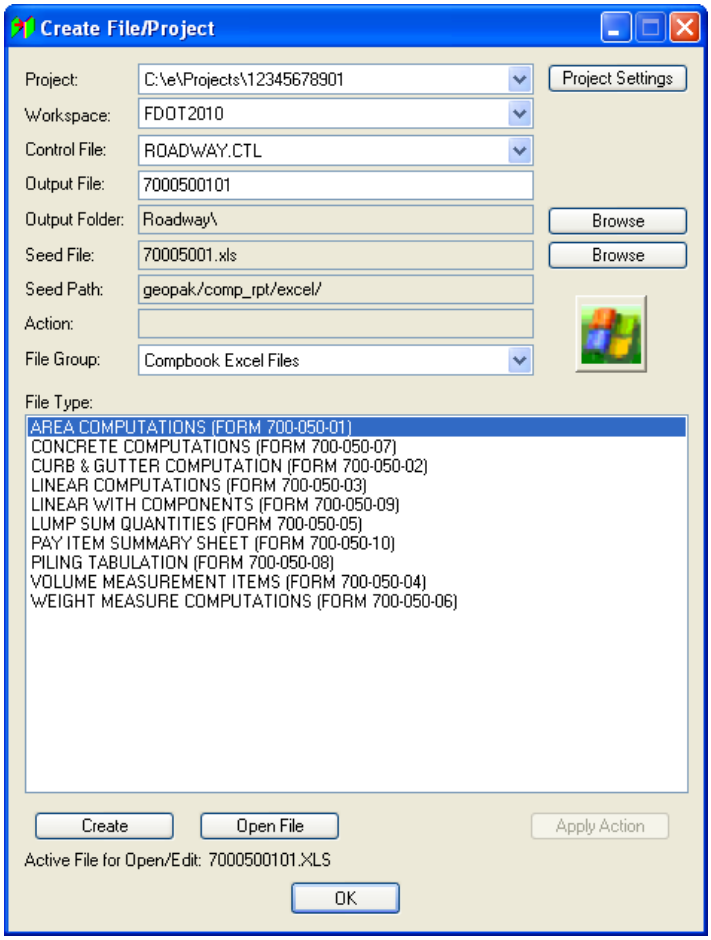


4. From FDOT Menu, select either **Right of Way > Create Design Files** or **Actions > Create/Edit File**.



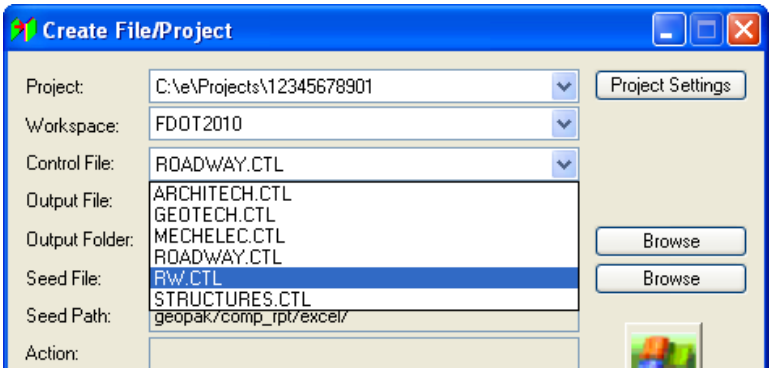
Note Initially, FDOT Menu will start in a Roadway configuration. Changing the FDOT Menu configuration to Right of Way will be covered in the Lab Exercise: Invoke RW FDOT Menu.

5. The Create File/Project dialog displays. Verify that the *Project* is set to **C:\E\Projects\12345678901**. If not, use the **Project Settings** button to change the *Project* location.

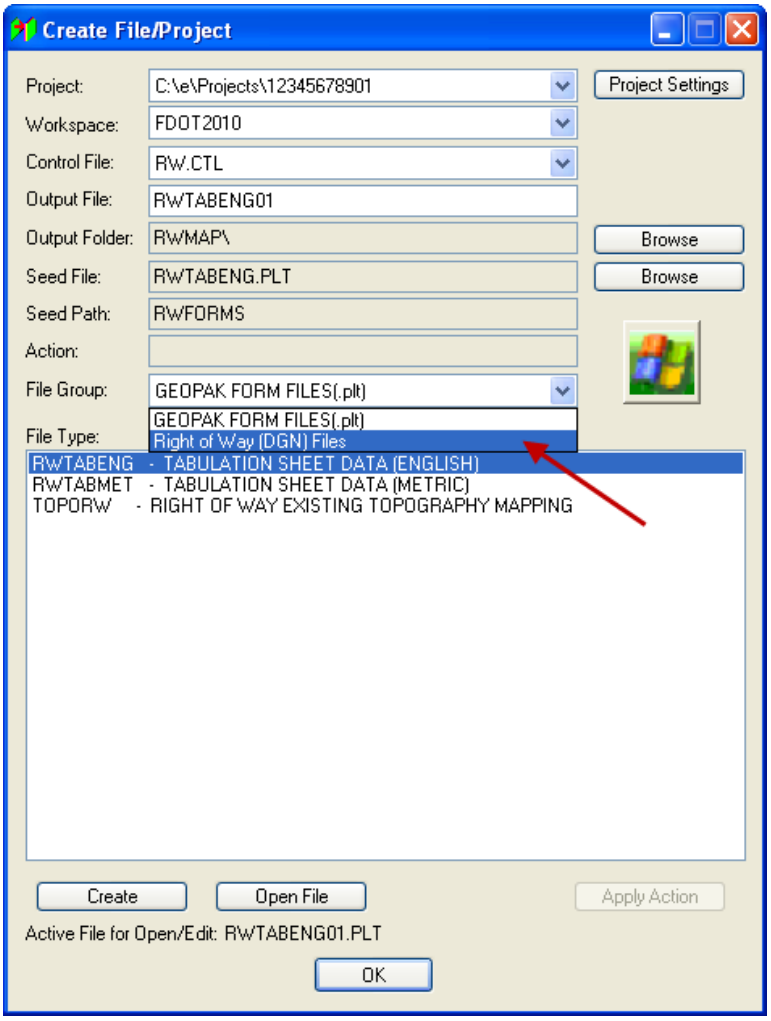


 © 2015 FDOT

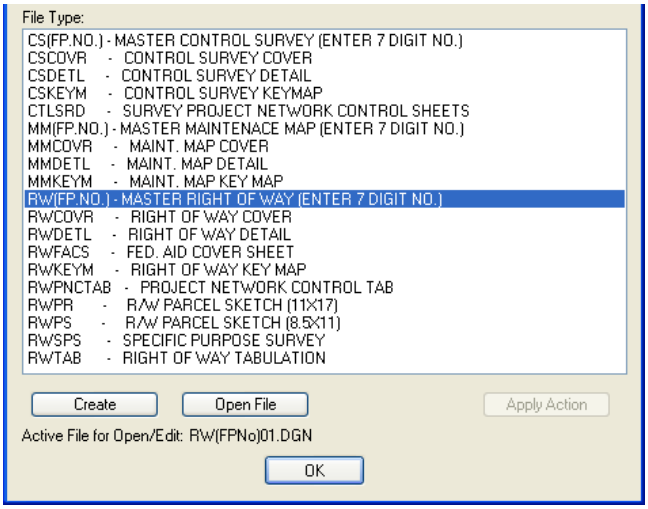
6. T**o** create Right-of-Way design files, the *Control File* must be changed from t*he* Roadway Control file *t*o the Right-of-Way Control file**. Cl**ick the drop down arrow to display the list of control files, and thes select the **RW.CTL** file.



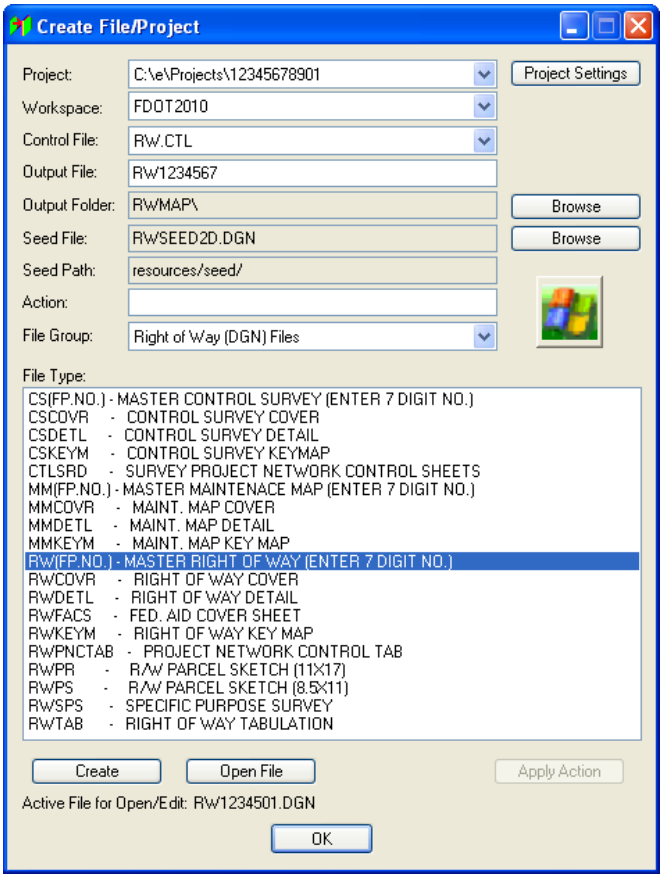
7. From the *File Group* pull-down, select the **Right of Way (DGN) Files** option. A list of FDOT DGN files that can be created for Right-of-Way use will be listed in the *File Type* section of the dialog.



8. From the *File Type* list, select **RW(FP.NO.) – MASTER RIGHT OF WAY (ENTER 7 DIGIT NO.)** as the file type to be created.

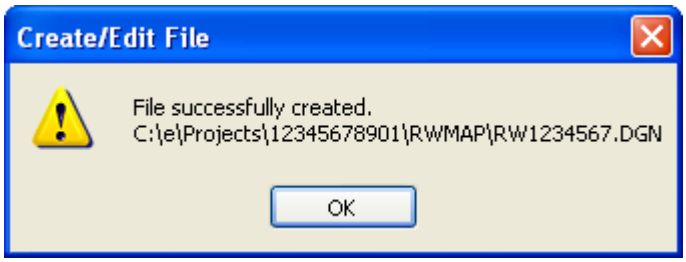


9. In the *Output File* field, enter the project's *FIN number* to be used, in this case **1234567**. Be sure to delete the **"01"** at the end of the file name. Click the **Create** button. Be careful to only click the **Create** button once. If the **Create** button is clicked more than once, multiple DGN files will be created.

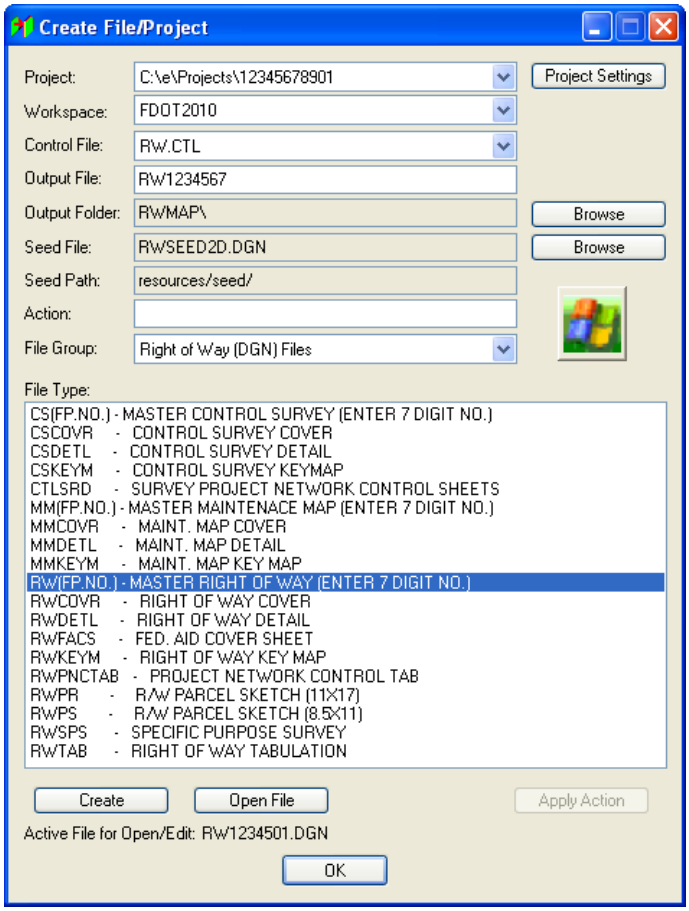


Note According to Chapter 9 of the FDOT CADD Production Criteria Handbook (CPCH), the main Right-of-Way DGN file will always be named **RW#######.dgn**, where **#######** is the first seven digits of the project's FIN number.

10. Click **OK** on the **"***File successfully created***."** confirmation dialog. A new DGN file named **RW1234567.dgn** has now been created in the *rwmap* folder of the project.



11. Click the **Open DGN** button now available on the Create File/Project dialog.



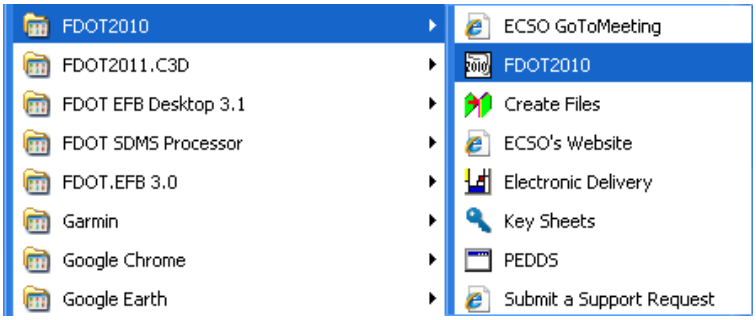
12. MicroStation closes the *RW.dgn* file and opens the newly created ***RW1234567.dgn*** file.

Note The **Create File/Project** tool only creates the *RW Main.dgn* file; it does not place a RW sheet cell in the DGN file created. Placing RW sheet cells will be covered in a later chapter.

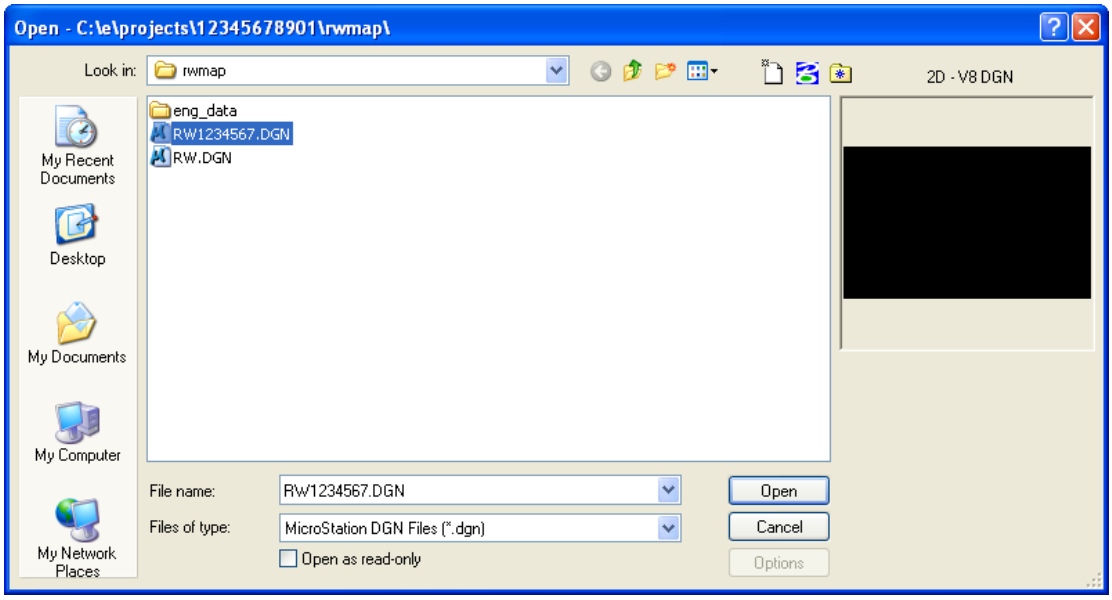
Exercise 2.2 Invoke RW FDOT Menu

➢ ***In this exercise the user will learn how to load the RW FDOT Menu.***

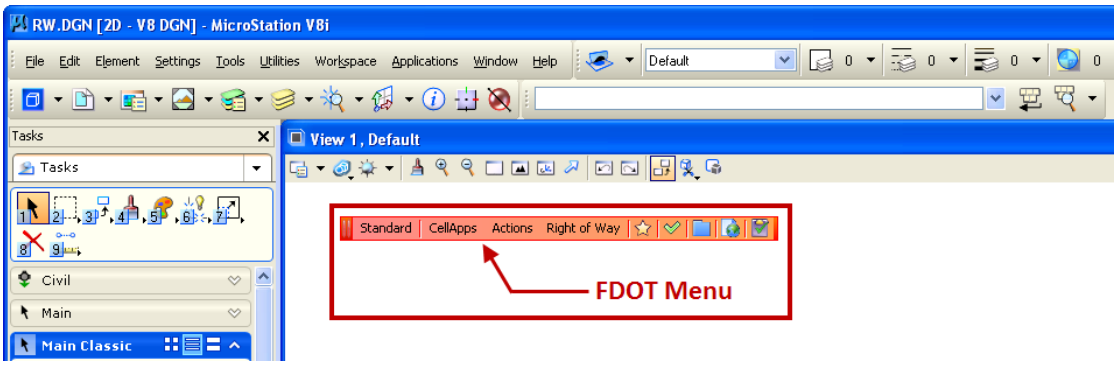
1. Open MicroStation using the FDOT2010 icon FDOT2010 on the desktop. As an alternative, launch MicroStation from the FDOT2010 folder on the Windows Start menu.



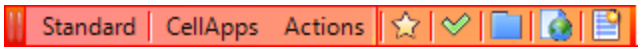
2. From the MicroStation Manager, open the file C:\E\Projects\12345678901\rwmap*RW1234567.dgn*. Be sure that the correct *User*, *Project*, and *Interface* are chosen as shown below.



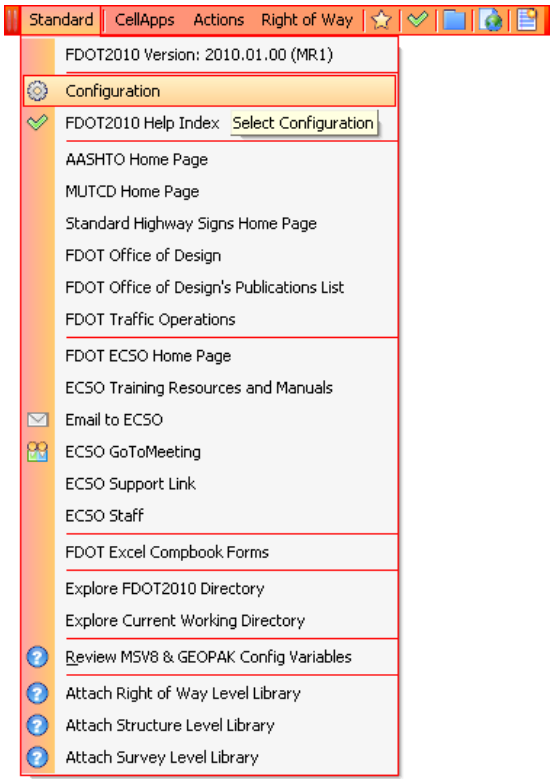
3. FDOT Menu will start automatically after GEOPAK is initialized.



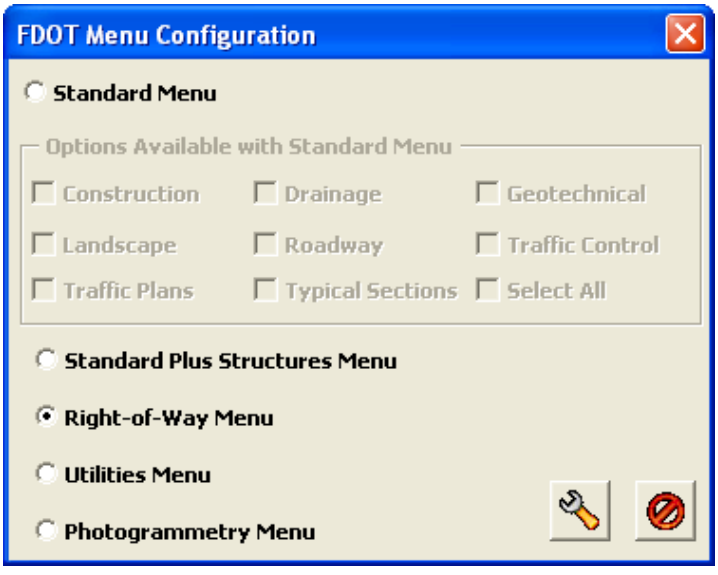
4. Once inside the MicroStation file, notice that the FDOT Standard Menu displays. Take a moment to look at the different pull down menus and commands on the FDOT Menu.



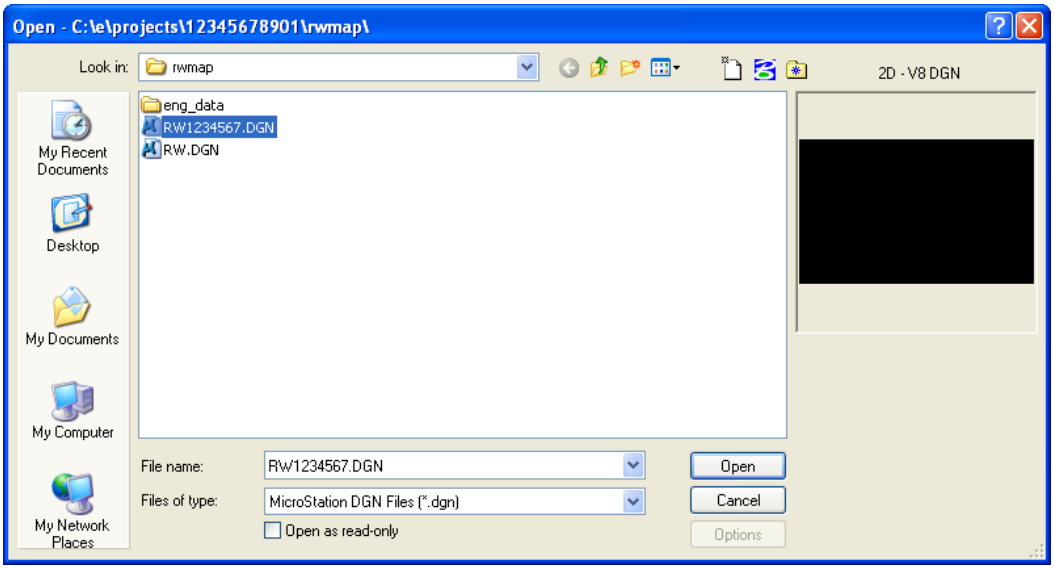
5. Select **Standard > Configuration** from the far left of the Standard FDOT Menu.



6. Select the option to for the **Right-of-Way Menu** and click **Update**. This will tell FDOT Menu to restart with both the Standard and Right-of-Way menus.



7. Select on the dgn file you want opened when the dialog displays.



8. FDOT Menu will restart with both the **Standard FDOT Menu** menu and the **Right of Way** menu loaded. Take a moment to look at the different pull down menus and commands on the FDOT Menu.

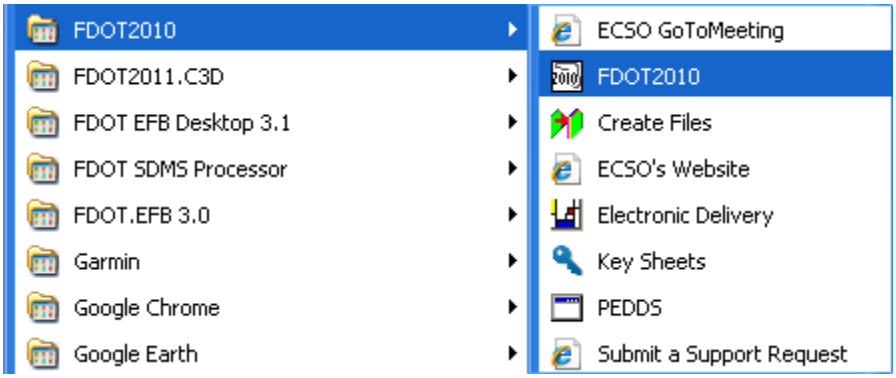
 © 2015 FDOT

Exercise 2.3 Relocate FDOT Menu

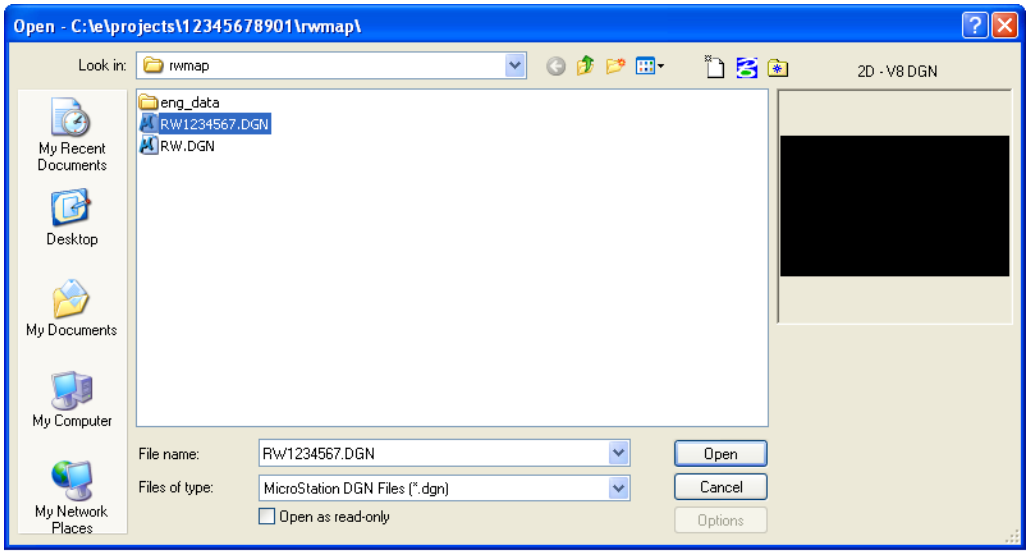
➢ ***In this exercise the user will learn how to relocate the FDOT Menu.***

1. Open MicroStation using the FDOT2010

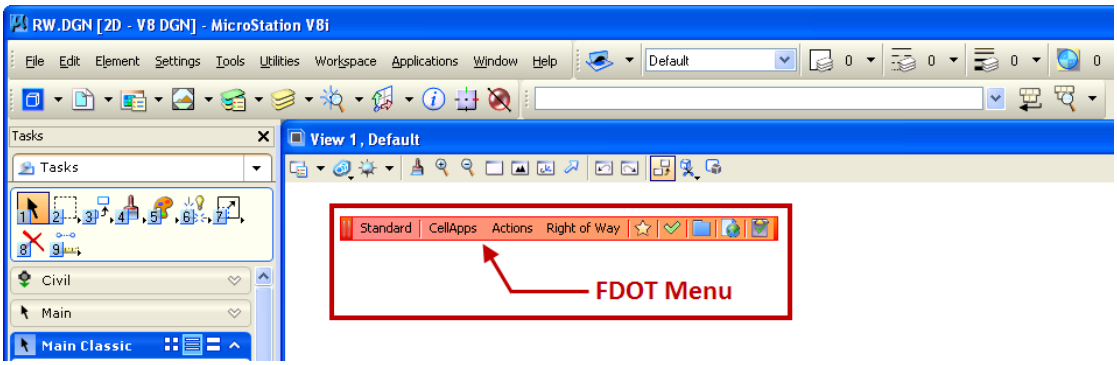
icon on the Desktop. As an alternative, launch MicroStation from the FDOT2010 folder on the Windows Start menu.



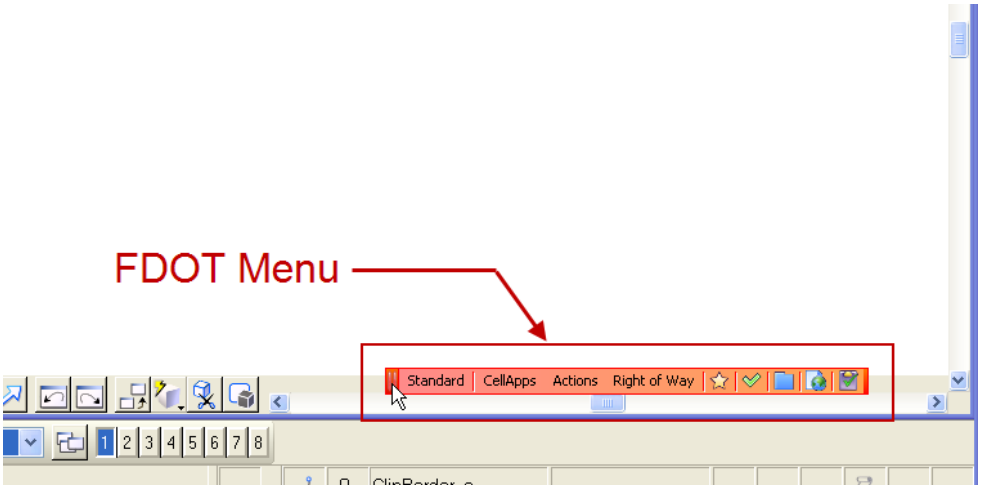
2. From the MicroStation Manager, open the file C:\E\Projects\12345678901\rwmap*RW1234567.dgn.* Be sure that the correct *User*, *Project*, and *Interface* are chosen as shown below.



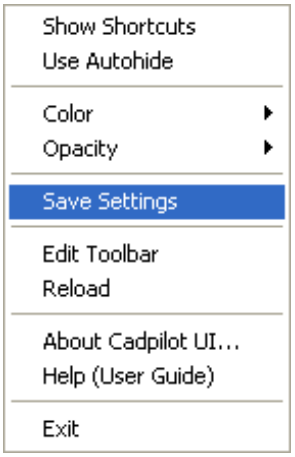
3. FDOT Menu will start automatica**lly** after GEOPAK is initialized**.** Notice the inconvenient initial location of the FDOT Menu components.



4. Left -click and Hold on the left side of the FDOT Menu to move to more convenient location as shown below.



5. Right-click on the FDOT Menu and select **Save Settings** from the popup menu.



6. FDOT Menu will restart and will now display the floating toolbar in the same location whenever MicroStation is started.

3 GEOPAK MAPPING PROCEDURES

OBJECTIVES

This chapter will review GEOPAK Mapping Procedures for the FDOT Right-of-Way Mapper. Items covered will include:

- Setting GEOPAK User Preferences
- Creating GEOPAK Project
- Input and Visualization of Geometry Data
    - COGO
    - COGO Visualization Using the FDOT2008 SMD Database
    - Storing Parcels
        - COGO Method
        - Map Check
        - Graphical COGO

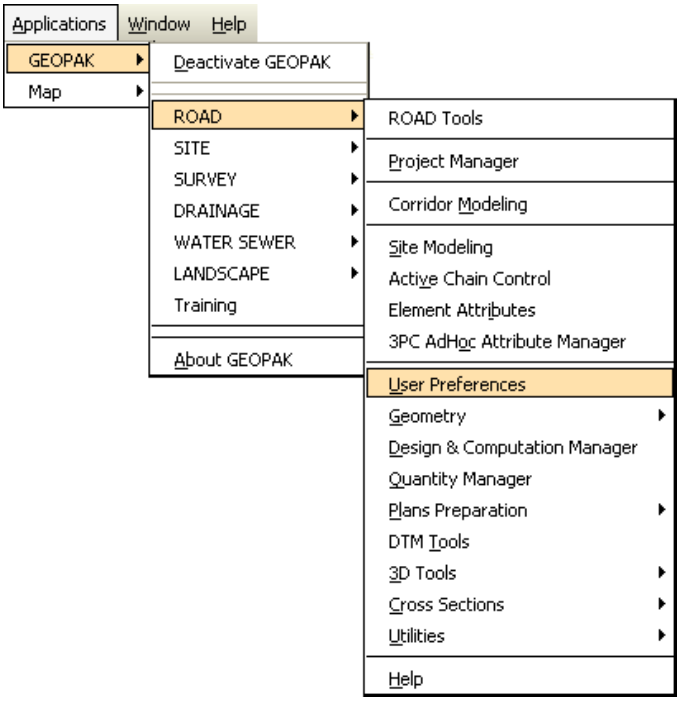
INTRODUCTION

GEOPAK is one of the primary tools used by FDOT Right-of-Way Mappers in order to place Right-of-Way data into MicroStation DGN files. The Right-of-Way data comes from a variety of sources such as FDOT's Electronic Field Book, CAiCE, older Right-of-Way projects, subdivision plats, title searches, and other sources. As the Right-of-Way data is collected and processed, the data is compiled and entered into GEOPAK's Database called the GPK file. Due to time constraints, this chapter assumes that most Right-of-Way data has already been entered into the GPK file and will primarily concentrate on showing the FDOT Right-of-Way Mapper how to map data from GEOPAK's GPK file into MicroStation using GEOPAK COGO.

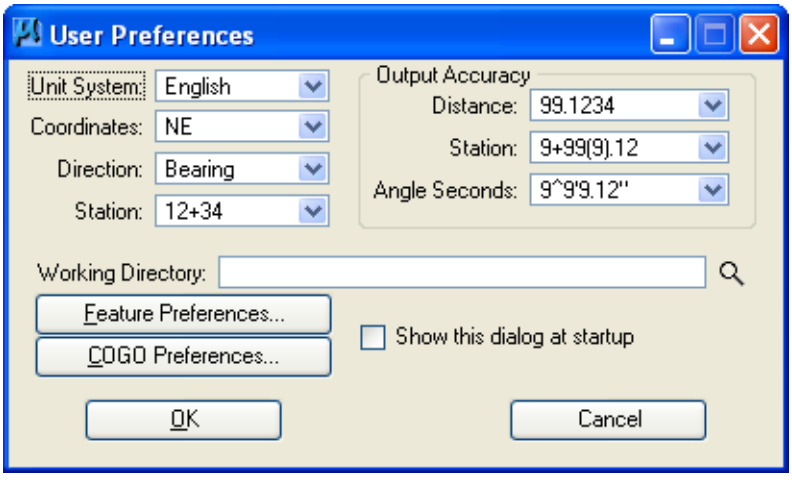
SETTING GEOPAK USER PREFERENCES

GEOPAK COGO has the ability to print design file elements which contain drawing parameters including element symbology, attribute drawing options and DTM controls. These Feature attributes are defined in a Survey Database with a file extension of .SMD. The FDOT CADD Software contains the database *fdote_10rw.smd*. This database should be automatically attached as the default when using the FDOT CADD Software.

GEOPAK should be initialized when the FDOT workspace starts. The main preference screen that needs to be set is the User Preferences. From the MicroStation menu, access the User Preference dialog by selecting **Applications > GEOPAK > ROAD > User Preferences**.



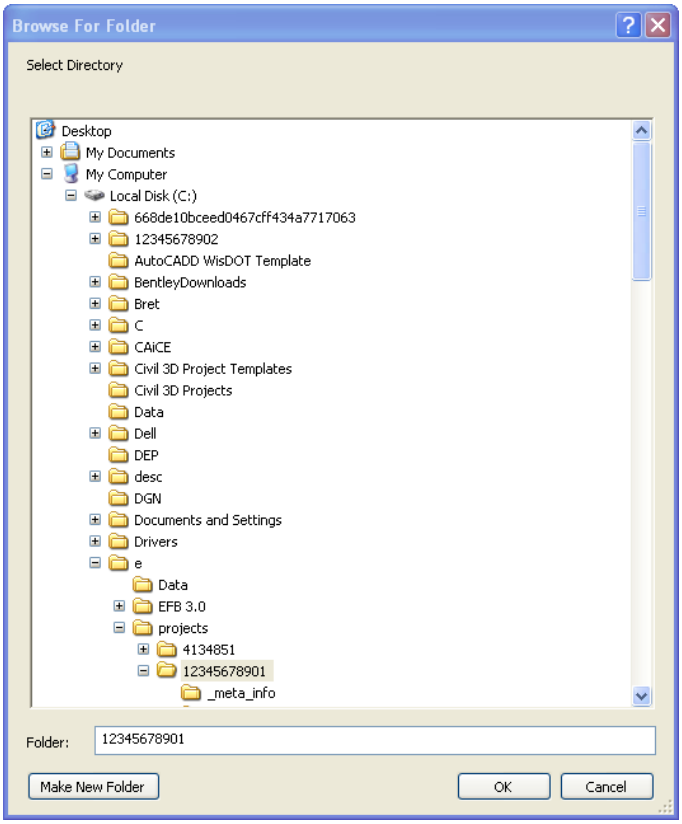
The GEOPAK User Preferences dialog displays.



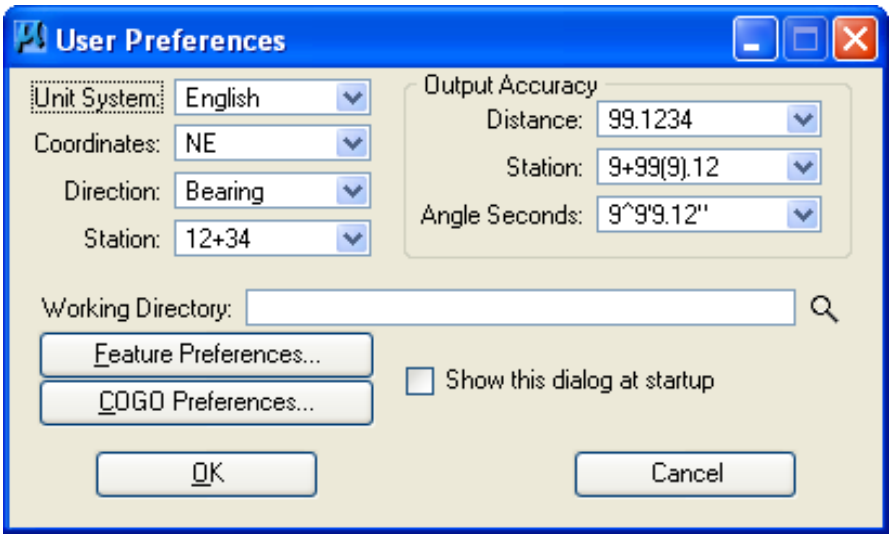
If the correct Project was chosen when opening the design file, the user will not need to set the working directory. The working directory is used to store all files created by GEOPAK.

© 2015 FDOT

If necessary, the user can set the working directory by selecting the magnifying glass to browse to the correct directory. The Select Directory dialog will display allowing the user to select the desired Working Directory.



The Working Directory will be set by navigating to the correct file directory location and selecting **OK**. The User Preferences dialog will be redisplayed and the updated directory will display in the User Preference dialog.

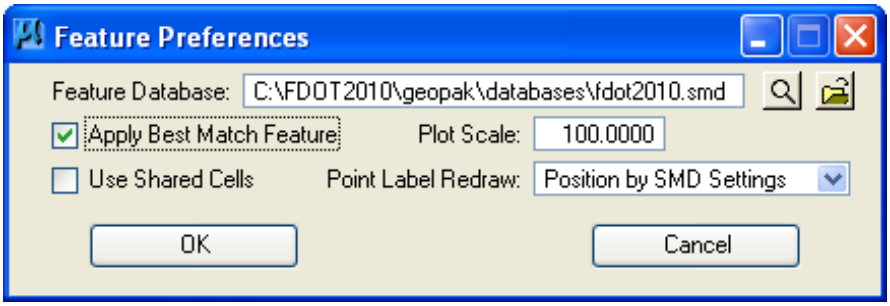


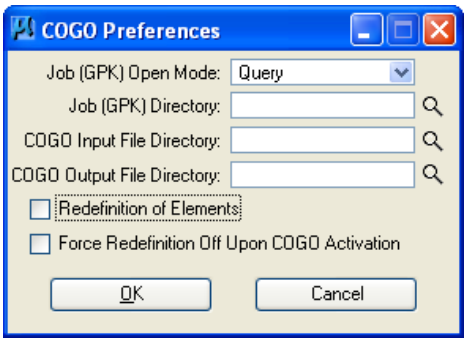
Note If the Working Directory is left blank, GEOPAK by default will look for files in the same directory of the MicroStation DGN file.

 © 2015 FDOT

FEATURE AND COGO PREFERENCES

Other User Preferences that will need to be set by the FDOT Right-of-Way Mapper are **Feature Preferences** and **COGO Preferences**. These preference settings are accessed by clicking their respective buttons on the **User Preferences** dialog. The proper settings for most FDOT Right-of-Way purposes are shown next.





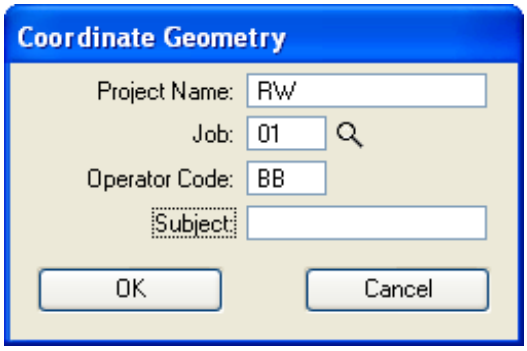
The Feature Preference dialog contains the following items:

- **SMD File** Displays the current working database. A different working database can be located and attached by the Select… button.
- **Edit SMD** This button will bring up the Survey Preference dialog for editing the database much in the same method as the Design and Computation Manager.
- **Apply Best Match Feature** When this toggle is active, the best match feature from the feature survey preference database is utilized. In the fdote_10rw.smd database the Default Feature category will be used if the active feature does not match a feature item in the current database category.
- **Plot Scale** Defines the scale at which linear elements such as custom line styles and cells will be plotted. It is important that the user set this prior to plotting elements into the design file project from the Coordinate Geometry dialog.

© 2015 FDOT

CREATING/ACCESSING A GEOPAK PROJECT

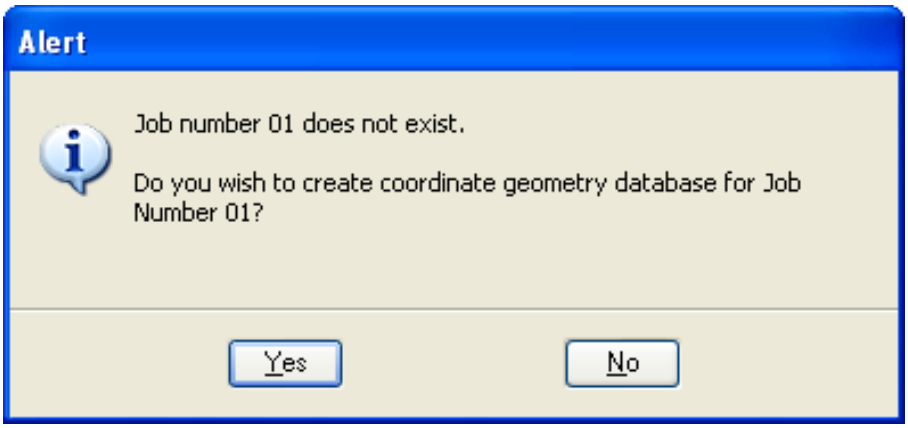
The easiest way for the FDOT Right-of-Way Mapper to create or access a GEOPAK project is from the MicroStation menu by selecting **Applications > GEOPAK > ROAD > Geometry > Coordinate Geometry**. This will open the Coordinate Geometry dialog.



There are three possible situations that may be encountered; desired Job already created and filled, desired Job created but not filled in, and new job needed to be created. Listed next are steps for each situation.

Situation	Action
Job Created and Filled in **Job** field.	Click **OK** to open the Job.
Job Created, but not filled in **Job** field.	Click the magnifying glass icon and browse to the desired Job.
New Job needs to be created.	Enter the desired Job number in the **Job** field and click **OK**. A new Job will be created in the same folder as the current DGN file.

If the specified GPK file does not exist in the directory specified by the **Working Directory**, the user will receive the following Alert. If the user wishes to create a new GPK file, this message would be normal and the user would click **Yes** to create a new GPK file. If the GPK file already exists this message would most likely indicate that the user has specified the wrong **Working Directory**.



 © 2015 FDOT

INPUT AND VISUALIZATION OF GEOMETRY DATA

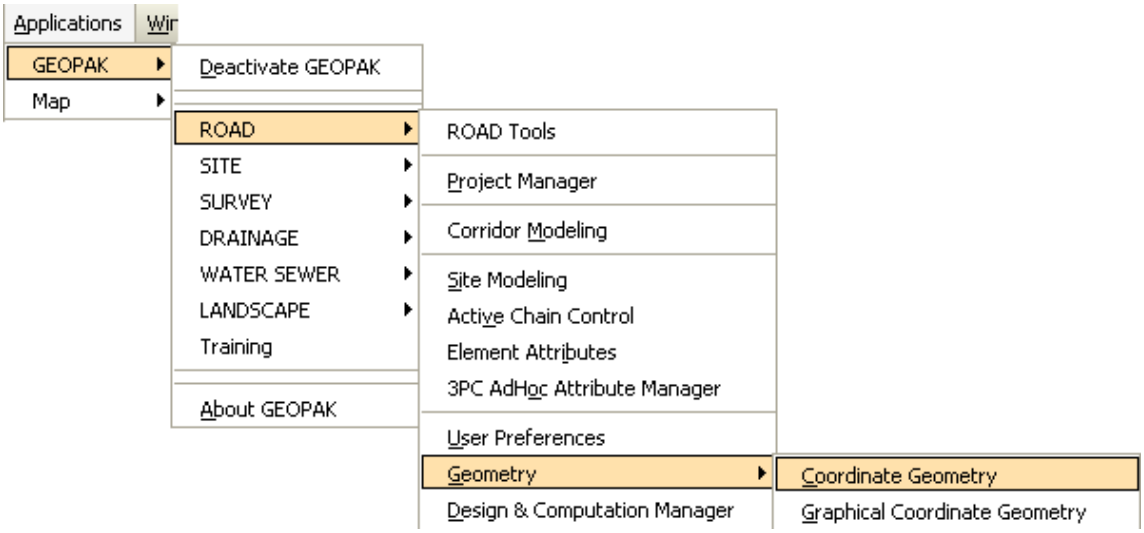
The primary tools that will be used by the FDOT Right-of-Way Mapper other than the Right of Way FDOT Menu will be the GEOPAK COGO tools. In this section the user will learn:

- COGO
- COGO Visualization Using the FDOT2010 SMD Database
- Graphical COGO

COORDINATE GEOMETRY (COGO)

The major components to GEOPAK COGO are COGO, Graphical COGO, and COGO Visualization. Both COGO and Graphical COGO are used to enter, edit, and report on Right-of-Way elements in the GEOPAK GPK database. COGO Visualization is the means by which the FDOT Right-of-Way Mapper is able to draw elements stored in the GPK into the MicroStation DGN file. The Visualization process is primarily performed through GEOPAK's COGO Navigator. Each of these items is covered in the next sections.

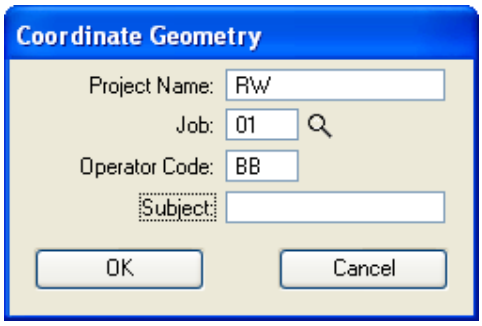
To activate **COGO,** select **Applications > GEOPAK > ROAD > Geometry > Coordinate Geometry** from the main MicroStation menu.



The FDOT RW Mapper can also select the *COGO* icon from the *GEOPAK ROAD Tools* tool palette as shown below.

 © 2015 FDOT

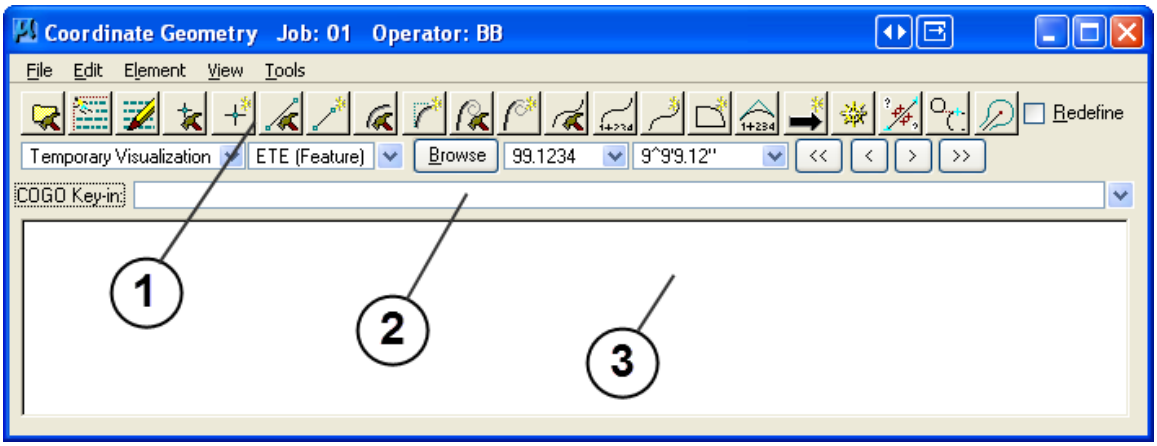
Either method will open the GEOPAK Coordinate Geometry dialog. This dialog allows the user to create a Project Name, pick a Job Number (GPK File), and to assign an Operator Code for the COGO session.



The fields in the GEOPAK Coordinate Geometry dialog are detailed next.

- **Project Name** Name displayed on reports. This is an optional entry, with a maximum of 60 alphanumeric characters. If Project Manager is active, this field is populated automatically.
- **Job Number** Identifies coordinate geometry database and is a required field. The job number is a maximum of three alphanumeric characters. If Project Manager is active, this field is populated automatically.
- **Operator Code** Unique 2-character code which enables multiple users access to database. The user's initials are suggested. Note this field is not required for single user access, but highly recommended. If Project Manager is active, this field is populated automatically.
- **Subject** Description for audit trail file with a maximum of 48 alphanumeric characters. Note this field is optional.

After the dialog is populated, and the **OK** button is pressed, the main coordinate geometry dialog is invoked.



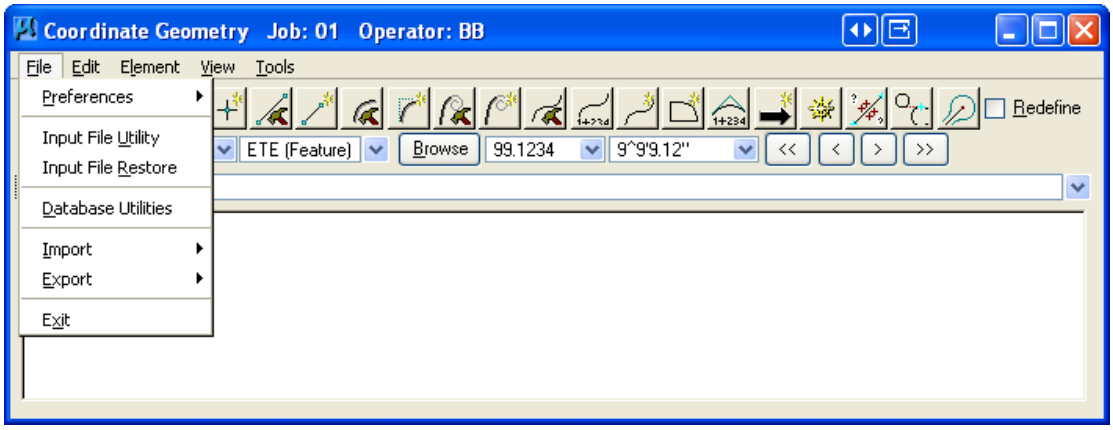
The coordinate geometry dialog is made up of three separate display areas:

- **Tool Bar** (1) consisting of pull down menus and icons. The icons are customizable.
- **Command Key-in** (2) enables manually typing of commands. The drop down button allows for a history of commands to be seen.
- **Output Display Window** (3) shows the results generated by the commands.

Note The dialog is resizable for ease of use.

 © 2015 FDOT

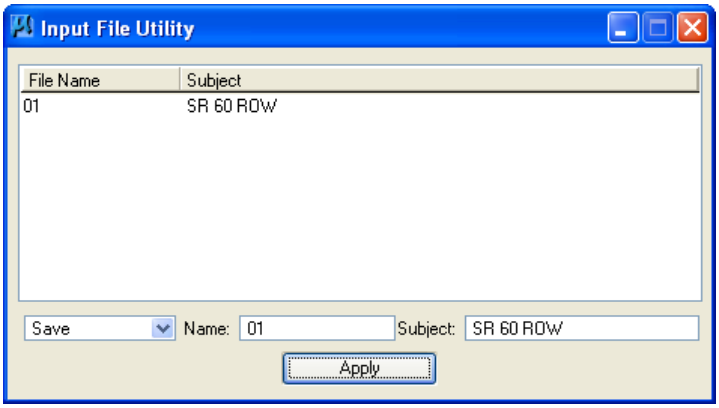
FILE COMMANDS



The File commands (as displayed above) are detailed in the table.

- **Preferences** This command displays an expanded menu for setting GEOPAK COGO preferences.

- **Input File Utility** When selected, GEOPAK's **Input File Utility** dialog displays, allowing the user to save and print a variety of files related to the GEOPAK COGO session.



Note When saving COGO files, the user must follow proper naming convention. See the CPCH Section 4.1 for the proper file naming convention. Also the path to these files must not contain any spaces or special characters.

- **Input File Restore** When selected, runs the COGO command **Restore** which reads a GEOPAK INPUT file into memory for execution.

- **Database Utilities** When selected, the **Database Utilities** dialog displays which allows the user to Validate and Clean and Compress the GEOPAK GPK Database file.

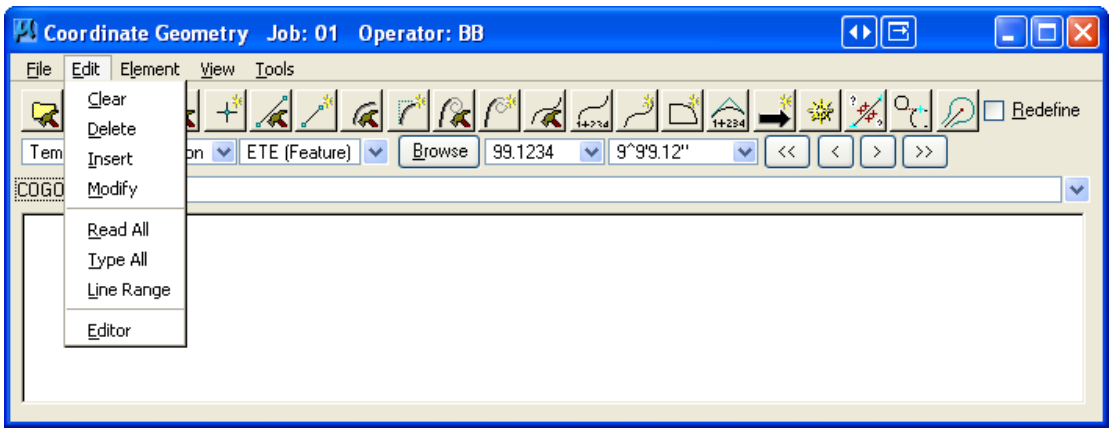
- **Import** Displays an expanded menu for importing information into GEOPAK COGO.

- **Export** Displays an expanded menu for exporting information from GEOPAK COGO.

- **Exit** Exits the GEOPAK COGO session.

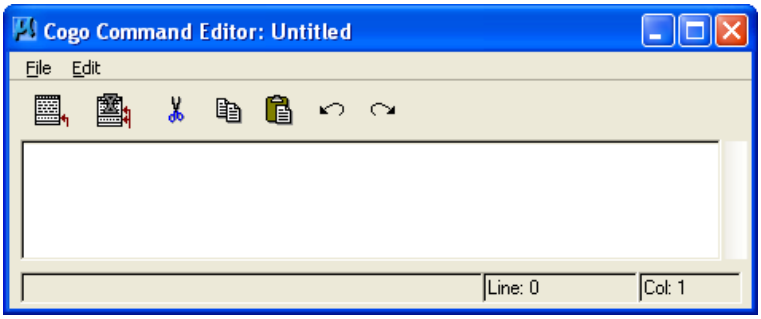
© 2015 FDOT

EDIT COMMANDS



The Edit commands (as displayed in the exploded view above) are detailed in the table.

- **Clear** — Empties the memory of the current audit trail without saving and initializes the line numbers to begin a new sequence of commands. Note this does not clear the display window.
- **Delete** — Deletes input commands in the input buffer by line number (or range of line numbers) and re-sequences the line numbers for the remaining commands.
- **Insert** — Adds a command line to the current input buffer *before* a specified line number; subsequent command lines shift down and line numbering is automatically re-sequenced.
- **Modify** — Changes a fragment in a command line. The modified command line is not processed until a Read command is performed.
- **Read All** — Processes ALL the specified lines in the audit trail.
- **Type All** — Displays the contents of the entire audit trail.
- **Line Range** — Opens the **Line Range** dialog which will allow the user to Read or Type a portion of the audit trail.
- **Editor** — Opens the GEOPAK COGO Command Editor, which enables the user to edit the current input file.

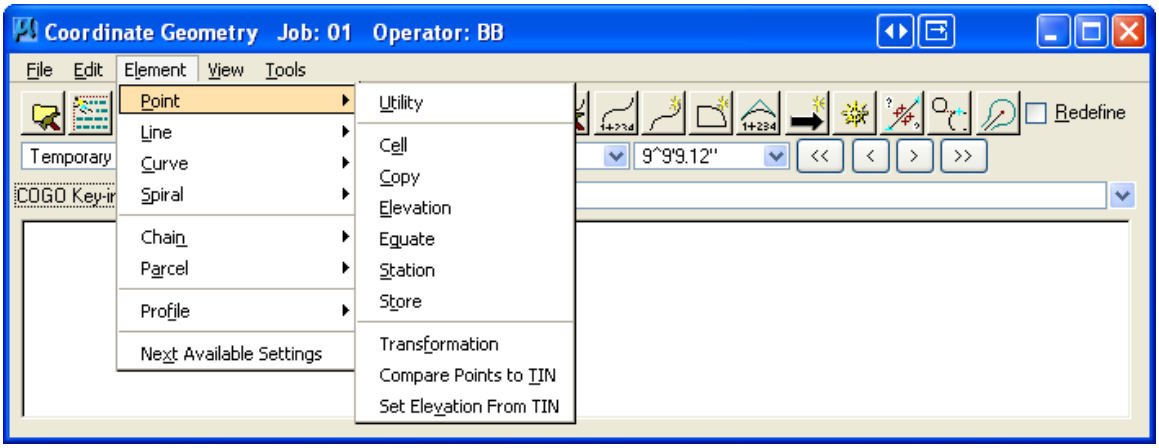


 © 2015 FDOT

ELEMENT COMMANDS

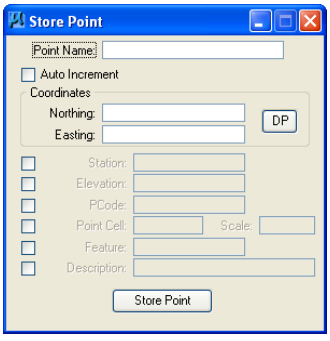
The mainstay of GEOPAK Coordinate Geometry is the various element commands. Tools are supported for storing, stationing, adding additional data, deleting, etc. GEOPAK supports a wide variety of elements: points, curves, spirals, chains or alignments, parcels, and profiles. Each element is detailed next.

- Element > Point



One of the most utilized sets of COGO tools are the point commands, as detailed in the table. COGO now has the ability to automatically determine the next available element name and place in any dialog storing an element. This includes all elements and dialogs listed on the above pull down.

- *Utility* — Opens the **Point Utility** dialog which allows the user to Delete, Print, and Visualize Point information.
- *Cell* — Opens the **Point Cell** dialog which allows the user to assign a particular cell to a point.
- *Copy* — Copies points or a point range to a new point number or range within the same GEOPAK database.
- *Elevation* — Assigns an elevation to a previously stored point.
- *Equate* — Stores a new point with the same values as a previously stored point
- *Station* — Adds a station to a previously stored point.
- *Store* — Stores a point by key-in coordinates or by selecting a location graphically. A station, elevation, point code, cell, feature, or description can also be stored with the point.

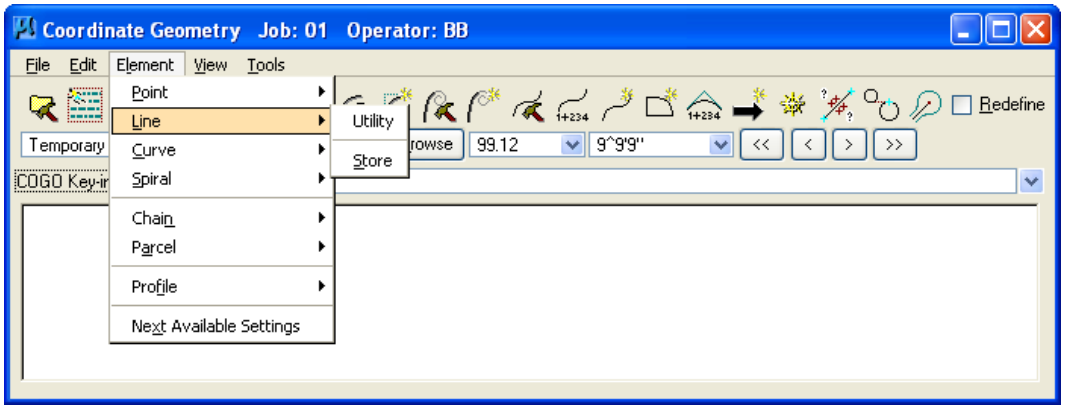


- *Transformation* — Performs coordinate transformations based on user-defined control pairings.

 © 2015 FDOT

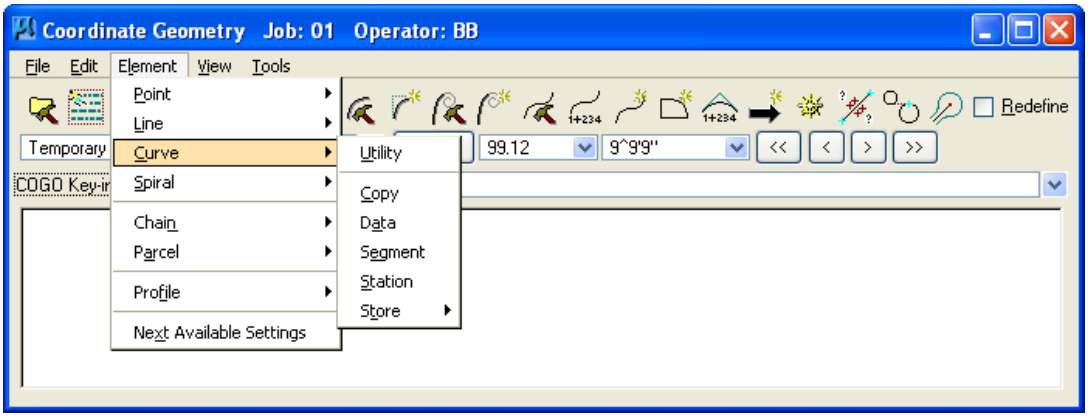
- *Compare Points to TIN* — Utilizing a set of COGO points (with elevations) compares the COGO elevation to the TIN elevation and completes statistical analysis for "goodness of fit."
- *Set Elevation from TIN* — Utilizing this command, GEOPAK adds or updates an elevation to a previously defined point, based on a TIN model.

- Element > Line



- *Utility* — Opens the **Line Utility** dialog which allows the user to Transpose, Delete, Print and Visualize Line information.
- *Store* — Opens the **Store Line** dialog which allows the user to store a line.

- Element > Curve

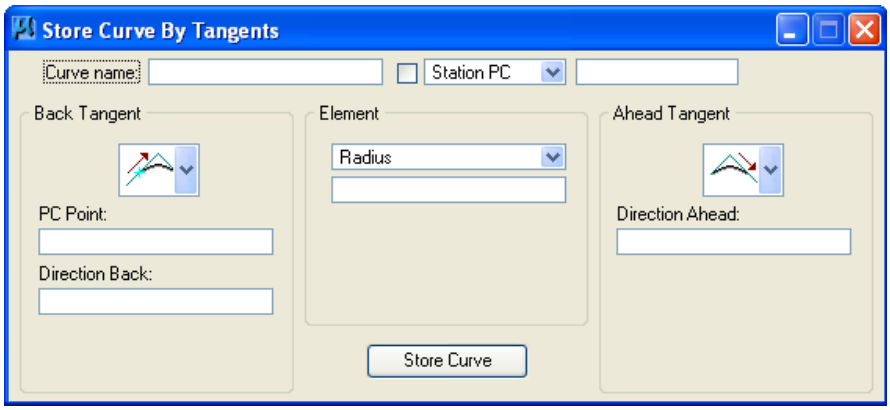


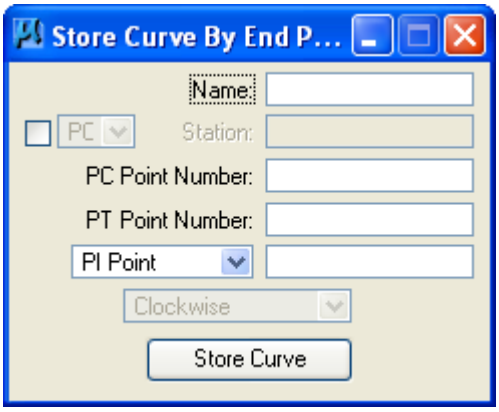
The Curve commands (as displayed in the exploded view above) are detailed in the table.

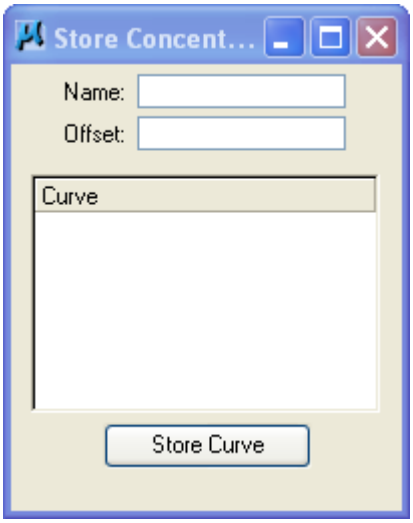
- *Utility* — Opens the **Curve Utility** dialog which allows the user to Reverse Stored Curves, Delete, Print and Visualize Curves.
- *Copy* — Copies a specified curve to another curve name.
- *Data* — Calculates the geometric parameters of a curve, displaying values for Delta, Degree, Tangent, Length and Radius.

 © 2015 FDOT

- *Segment* Defines new curves by dividing a stored curve into segments.
- *Station* By identifying a curve and the position on the curve (PC, PI, or PT), a station value may be assigned.
- *Store* Provides various options for defining and storing curves such as Store Curve from Tangents, By End Points, or Concentric.

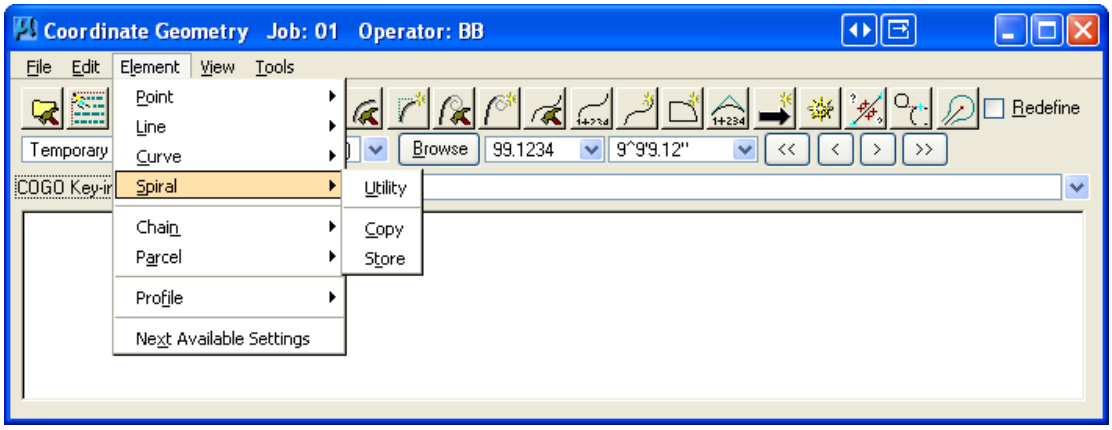






 © 2015 FDOT

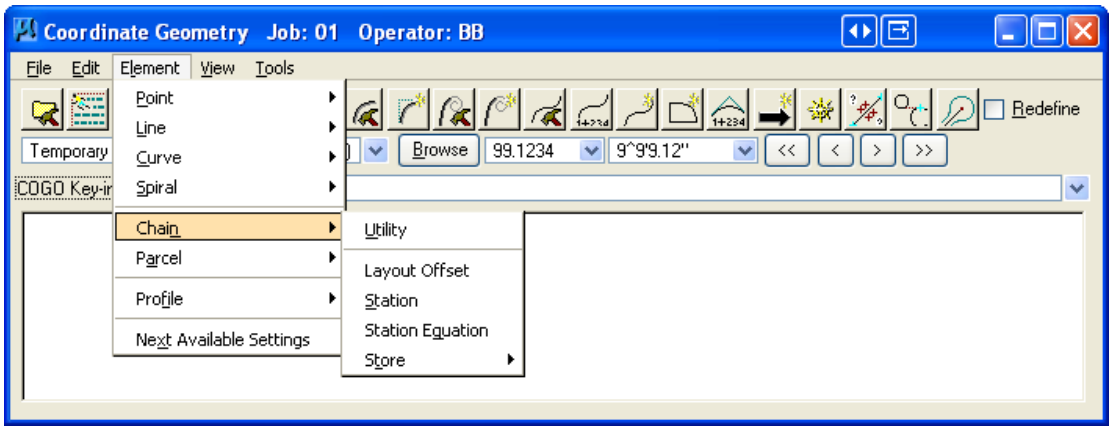
- Element > Spiral



The Spiral commands (as displayed in the exploded view above) are detailed in the table.

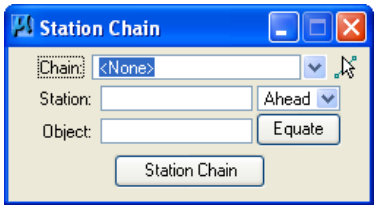
- *Utility* Opens the **Spiral Utility** dialog which allows the user to Delete, Print, and Visualize Spirals.
- *Copy* Copies a specified spiral to another spiral name.
- *Store* Provides various options for defining and storing spirals.

- Element > Chain



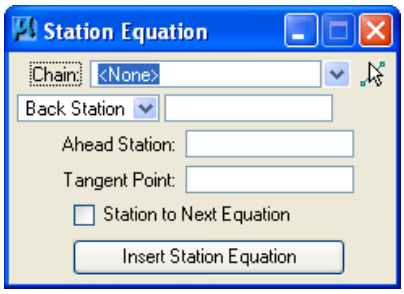
The Chain (alignment) commands (as displayed in the exploded view above) are detailed in the table.

- *Utility* Opens the **Chain Utility** dialog which allows the user to Compute area, Delete, Print, and Visualize Chains.
- *Layout Offset* Opens the **Layout Offset Chain** dialog which allows the user to compute Stations and Offsets for GEOPAK Points and Chains.
- *Station* Provides a method for stationing or re-stationing a chain.

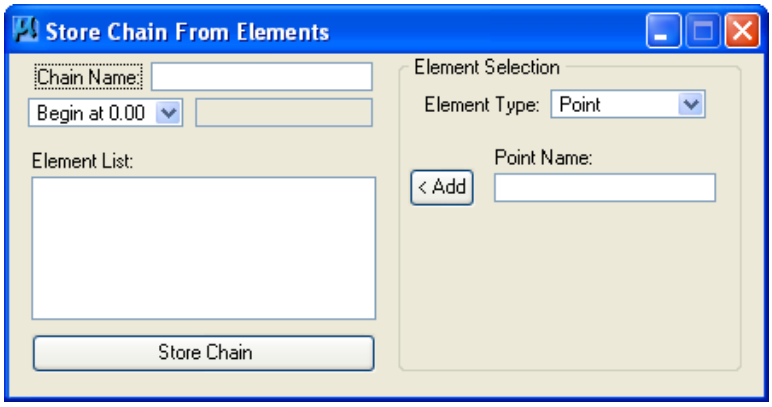


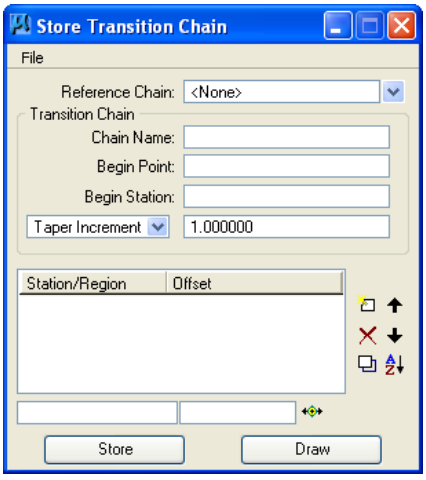
 © 2015 FDOT

- *Station Equation* — Provides a method for applying a station equation to a chain.



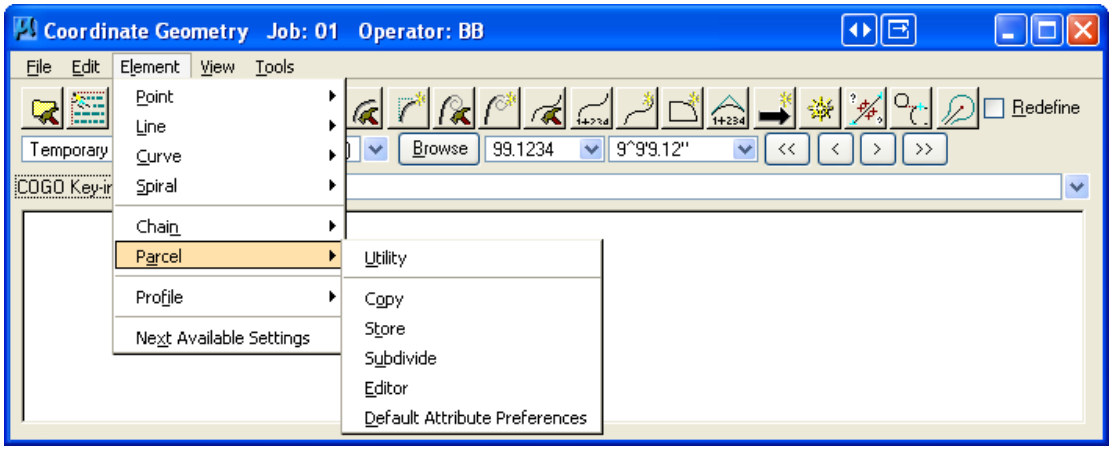
- *Store* — Provides three options for storing a chain in the database, From Elements, From Offset Chain and a Transition Chain. (Chain name can be between 1-9 alphanumeric characters).





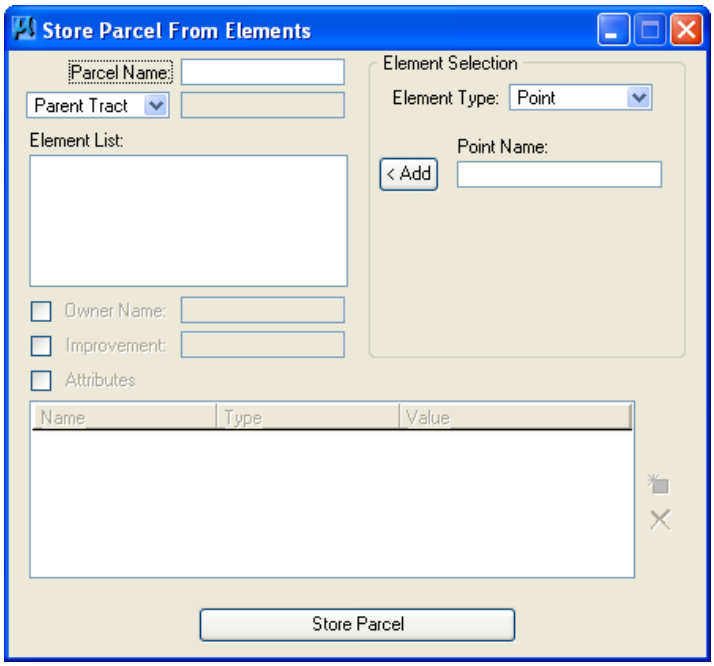
 © 2015 FDOT

- Element > Parcel



The Parcel commands (as displayed in the exploded view above) are detailed in the table.

- *Utility* — Opens the **Parcel Utility** dialog which allows the user to Delete, Print, Describe, and Visualize Parcels.
- *Copy* — Opens the **Copy Parcel** tool which allows the user to copy parcels.
- *Store* — Stores a parcel by adding points, curves and spirals.



- *Subdivide* — Divides a parcel into individual lots.
- *Editor* — Allows the user to edits a parcel using the **Map Check / Store Parcel** tool.
- *Default Attribute Preferences* — Allows the user to create custom Attributes to be applied to parcels.

- Parcel Commands (Manual Entry)

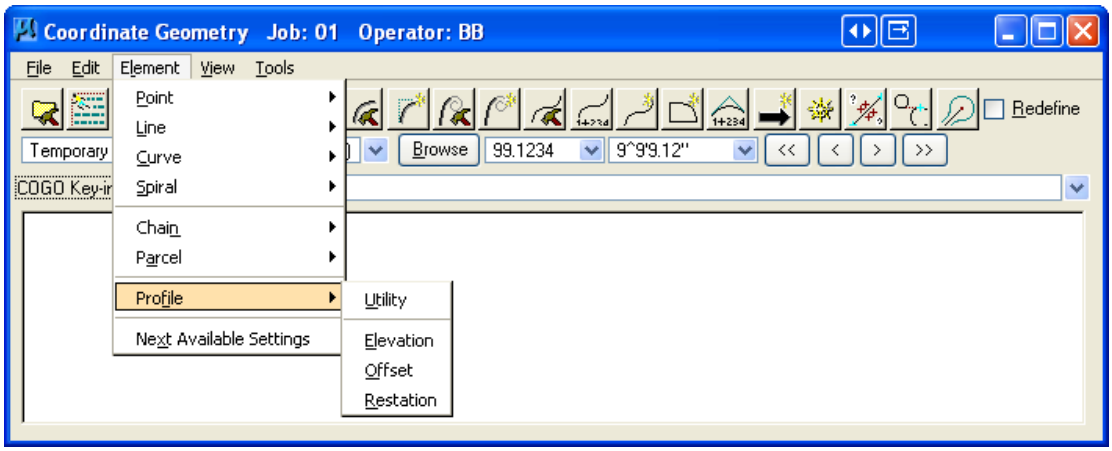
 © 2015 FDOT

Several parcel commands are supported by manual entry or via the Map Check dialog. Each of these commands accepts the input of specific names associated with each element. (i.e. taken names, easement names, etc.)

- *Store Parcel* Stores a parcel element into the GEOPAK GPK file.
- *Store Taken* Stores the portion of a parcel taken by entering point and curve names in either a clockwise or counterclockwise direction.
- *Store Easement* Stores an easement by entering point and curve names in either a clockwise or counterclockwise direction.
- *Store Building* Stores a building by entering point and curve names in either a clockwise or counterclockwise direction.
- *Store Occupied* Stores the occupied section of a parcel by entering point and curve names in either a clockwise or counterclockwise direction.
- *Own Parcel* Stores the name of the owner associated with a previously stored parcel.
- *Make Legal* Creates a metes and bounds description and writes it to a user named text file. See also Legal Description Editor for the ability to create detailed and customizable legal descriptions.

Note For more detailed parcel information, refer to the *GEOPAK* online help.

- Profile Commands

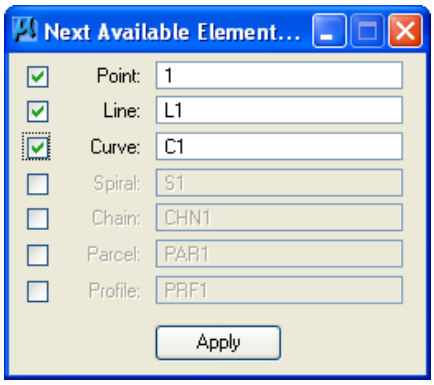


- *Utility* Provides access to the Profile Utility tool.
- *Elevation* Allows the user to compute elevations along a profile.
- *Offset* Allows the user to offset a profile vertically.
- *Restation* Allows the user to restation a profile.

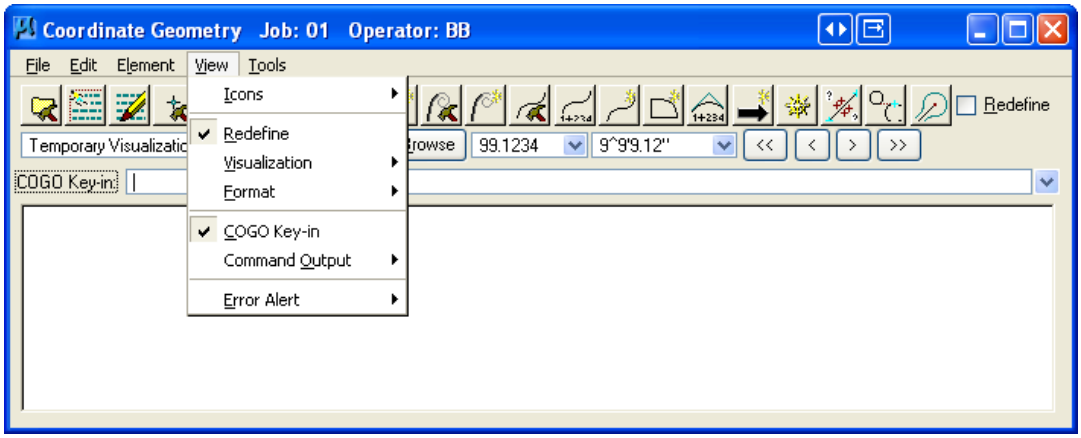
 © 2015 FDOT

- Next Available Settings

This menu choice allows the user to set the Next Available names for Points, Lines, Curves, Spirals, Chains, Parcels, and Profiles.



VIEW COMMANDS

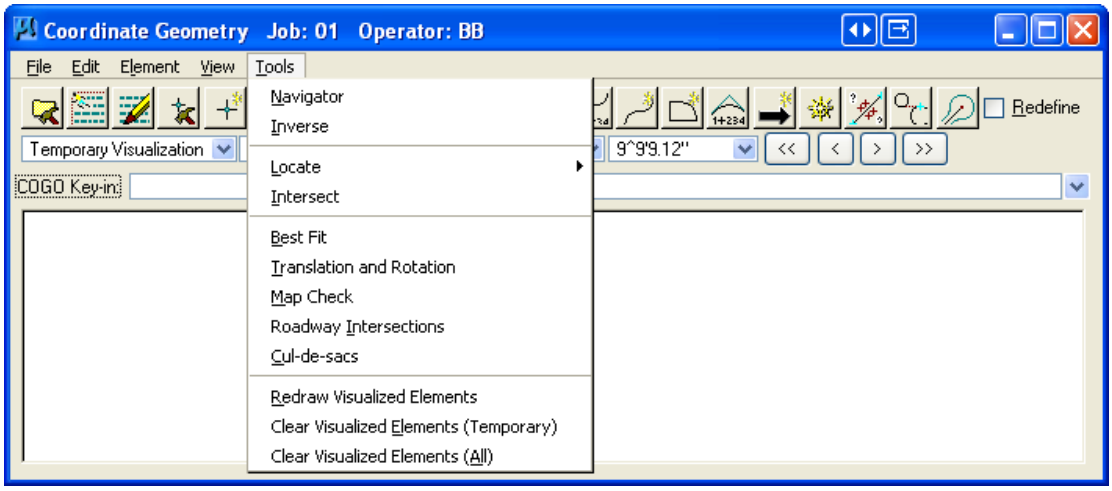


The View commands (as displayed in the exploded view above) are detailed in the table.

- **Icons** — Enables the user to customize which icons display in the tool bar.
- **Redefine** — Displays the Redefine box on the tool bar.
- **Visualization** — Displays the visualization items on the tool bar.
- **Format** — Displays the format items (i.e. number of decimals, station format, etc.) on the tool bar.
- **COGO Key-in** — Displays the COGO Key-in box for entering commands in the dialog.
- **Command Output** — Displays the Command Output Window in the dialog, and controls options for the Command Output Window.
- **Error Alert** — Enables the user to activate a *beep* and/or restore a minimized COGO dialog when an error occurs.

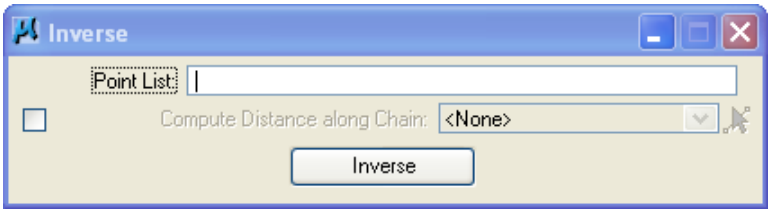
 © 2015 FDOT

TOOLS COMMANDS

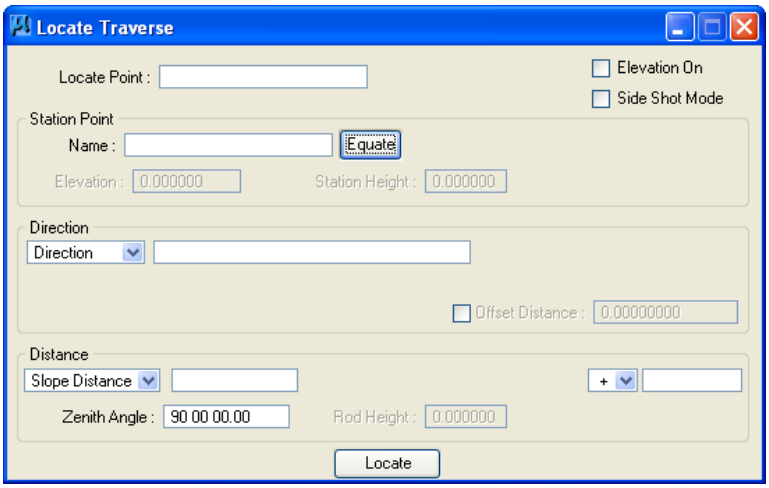


The Tools commands are detailed in the table.

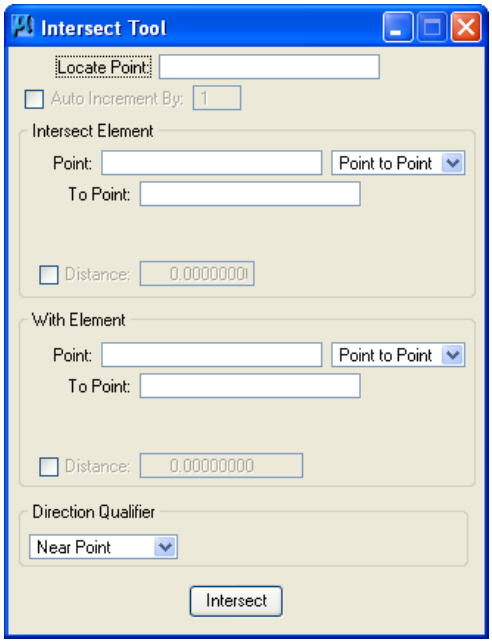
- **Navigator** Invokes the COGO Navigator.
- **Inverse** Calculates the distance and direction between points.



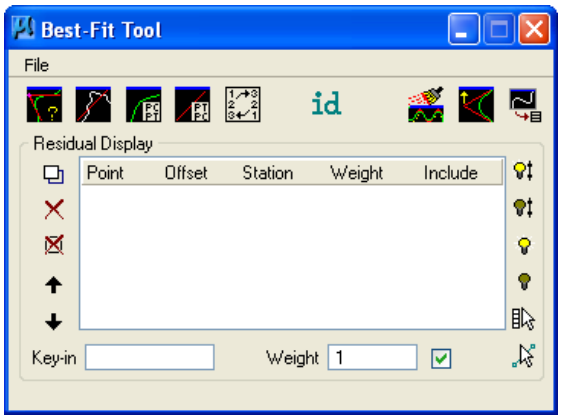
- **Locate** Stores a point not by specifying coordinates, but based on another point using several methods. To locate by distance and bearing, use the Tools > Locate > Traverse.



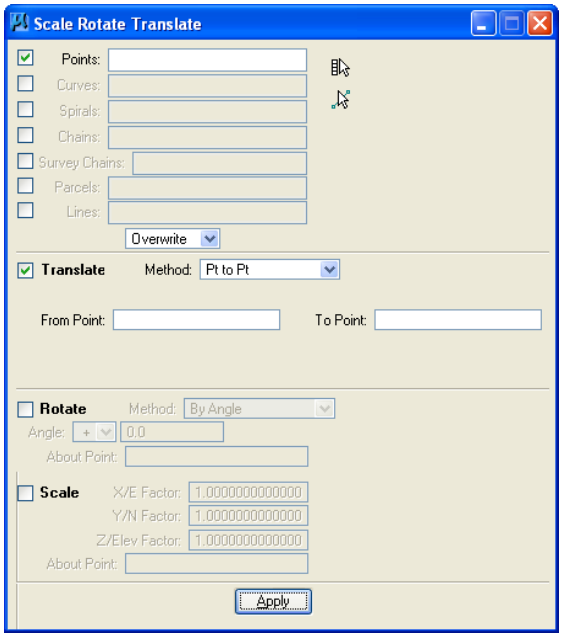
- **Intersect** — Stores a point at the intersection of the defined elements.



- **Best Fit** — Calculates a best-fit chain through a set of points.

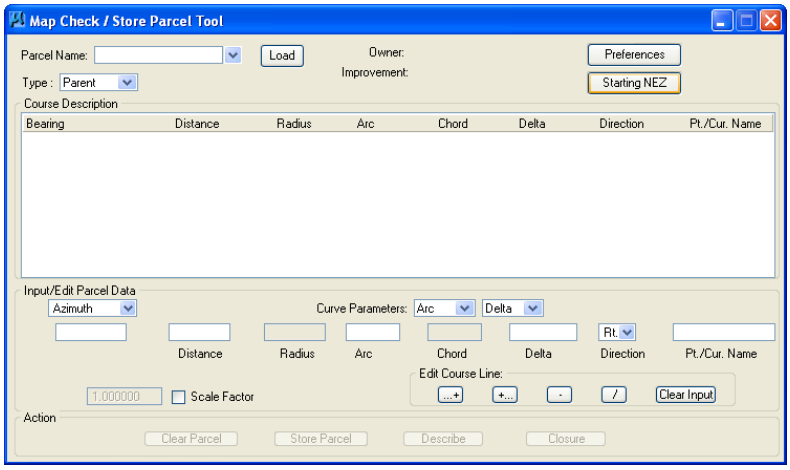


- **Translation and Rotation** — Moves, rotates, and scales a data set.



 © 2015 FDOT

- **Map Check** Creates and edits parcels, takings, easements, and other parcel elements.



- **Roadway Intersection** Calculates data for the intersection of two COGO elements, usually chains.

- **Cul-de-sacs** Calculates data for a cul-de-sac.

- **Redraw Visualized Elements** Re-syncs the displayed COGO elements in the MicroStation file with the coordinate geometry data.

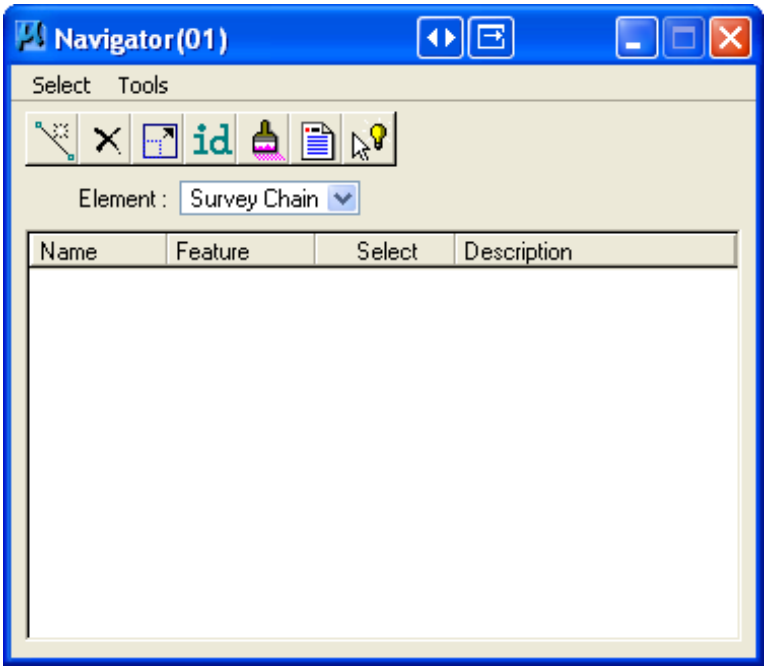
- **Clear Visualized Elements (Temporary)** Removes all temporary visualized elements from the view.

- **Clear Visualized Elements (All)** Clears all temporary and permanent visualized elements from the MicroStation file.

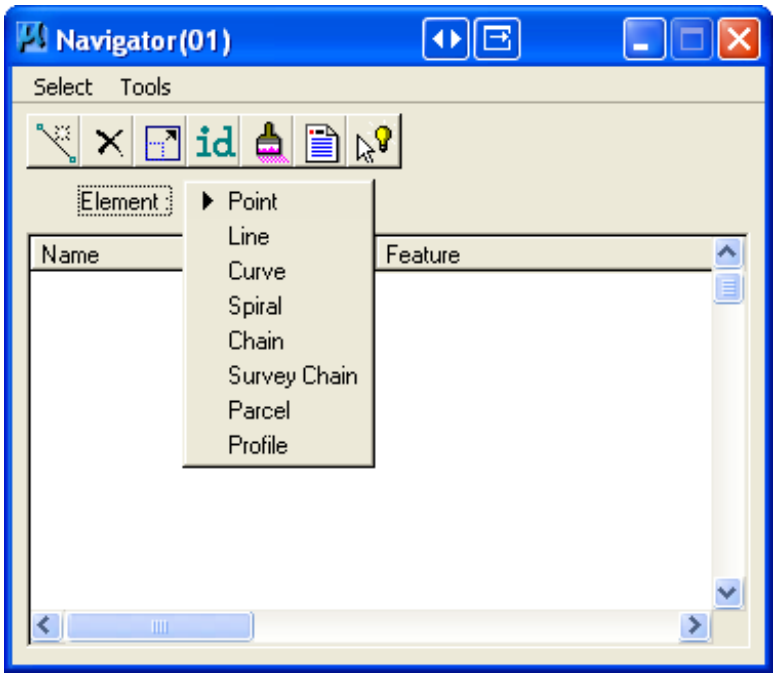
© 2015 FDOT

COGO VISUALIZATION USING THE FDOT2008 SMD DATABASE

The Navigator is a tool to easily visualize, store, edit, and describe COGO data. When visualizing COGO elements into the MicroStation DGN file, Navigator refers to a symbology database called the Survey Manager Database (SMD) file. The SMD file tells GEOPAK what type of symbology and labeling is to be applied to elements as they are drawn. To access the Navigator select **COGO > Tools > Navigator** or by the Navigator icon.



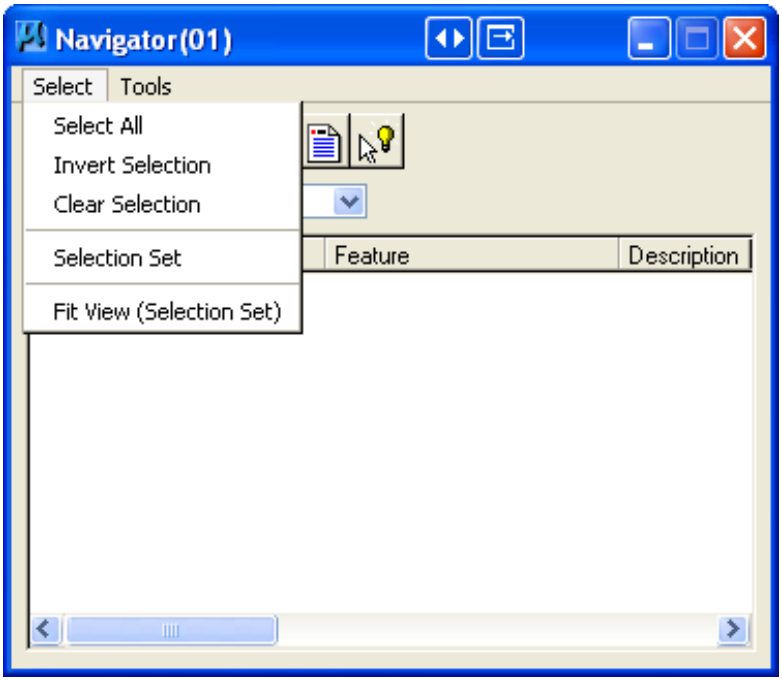
From the Navigator, points, curves, spirals, chains, survey chains, parcels, and profiles can be added, deleted, modified, identified, visualized, printed, or selected.



 © 2015 FDOT

NAVIGATOR > SELECT TOOLS

A variety of Selection tools can be invoked via the **Select** pull down .



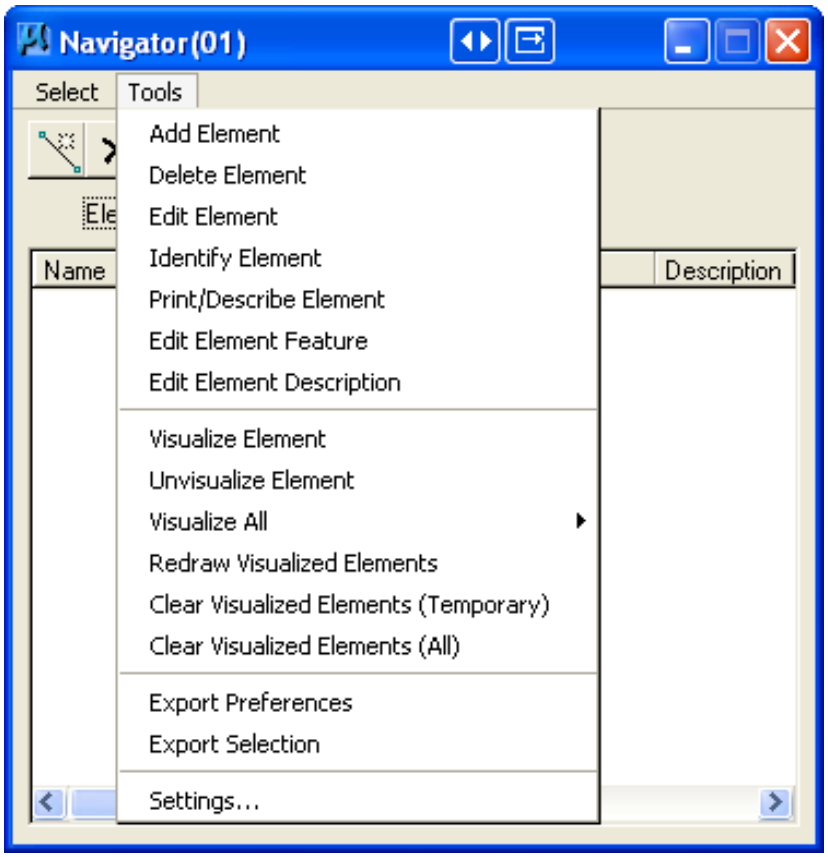
The tools are detailed in the table.

- **Select All** — Selects all data items of a certain type. (i.e. all points)
- **Invert Selection** — Selects all items not previously selected, and unselects all items previously selected.
- **Clear Selection** — Unselects all items.
- **Selection Set** — Allows the user to create a selection set that meets particular criteria. Same as using the Selection Set icon
- **Fit View (Selection Set)** — Fits the selected items to the active MicroStation window.
- **Show All Elements** — All items in the database are displayed in the MicroStation window.

© 2015 FDOT

NAVIGATOR > TOOLS

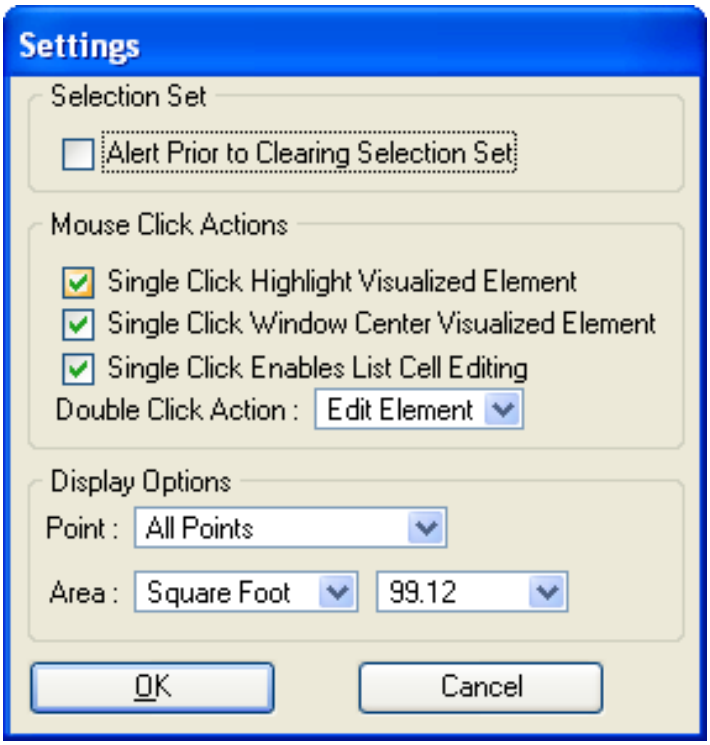
A variety of tools can be invoked via the Tools pull down, as depicted in the next view. Many can also be invoked via the shortcut icons displayed at the top of the Navigator.



- **Add Element** — Enables the selected type of element to be stored. When selected, the appropriate Store Element dialog is invoked.
- **Delete Element** — Deletes the highlighted element.
- **Edit Element** — Invokes the appropriate Store Element dialog, populated with the associated data of the selected element for editing.
- **Identify Element** — When pressed and a COGO element is graphically selected, the element is highlighted in the display field. If the selected element is not the displayed element type (i.e., curve or point), the element type is also changed.
- **Print/Describe Element** — Displays the selected element's data.
- **Edit Element Feature** — Changes the feature code of the element.
- **Visualize Element** — Displays the selected elements according to their feature code or default symbology.

 © 2015 FDOT

- **Unvisualize Element** — Un-displays the selected elements.
- **Visualize All** — Displays all of the elements of a certain type, or all elements.
- **Redraw Visualized Elements** — Re-syncs the coordinate geometry data with the data displayed in the MicroStation file.
- **Clear Visualized Elements (Temporary)** — Clears only temporary visualized elements from the view.
- **Clear Visualized Elements (All)** — Clears all visualized elements from the MicroStation file.
- **Settings** — Enables the user to define certain actions and behaviors of the Navigator.



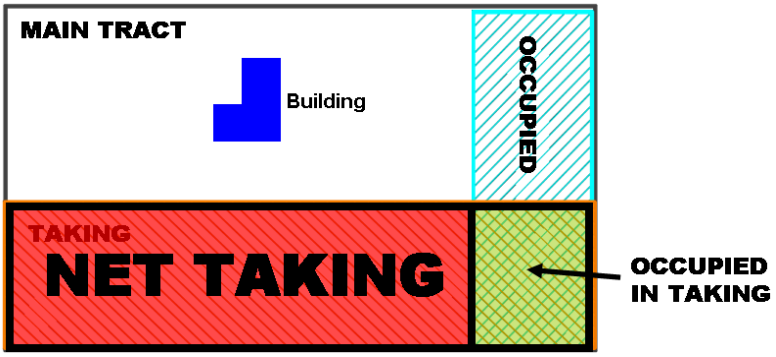
© 2015 FDOT

STORING PARCELS

One of the primary functions of FDOT Right-of-Way Mappers when producing Right-of-Way maps is the calculation of parent tracts and any takings from those parent tracts of land. Both the parent tract and any takings are stored in GEOPAK COGO as elements called Parcels. When Parcel calculations are completed, the original area, taking area, and remainder areas are calculated with COGO and are then transferred to the Table of Ownerships Right-of-Way sheet.

There are three basic ways of storing Parcels; the COGO method, the Map Check tool, and Graphical COGO. All three methods are briefly described next.

In addition to the **Easement** and **Taking** attributes, GEOPAK Parcels have two additional attributes. These additional attributes are **Building** and **Taking**. An example is shown below.



VARIOUS PARCEL KEY-IN COMMANDS

The following is excerpted from the GEOPAK Survey HELP file and contains information relating to key-in commands for Parcels, Easements, Takings, Improvements, and Buildings.

- Parcel Key-in Commands
  - ✓ S**TORE** PAR**CEL** name list

    Where **name** is the name of the parcel to be stored and **list** is the element list that comprises the parcel.
  - ✓ LIS**T** PAR**CEL**
  - ✓ PRI**NT** PAR**CEL name**
  - ✓ DES**CRIBE** PAR**CEL** name
  - ✓ DEL**ETE** PAR**CEL** list
- Easement Key-in Commands
  - ✓ **EAS**EMENT **list**
  - ✓ **EAS**EMENT **PAR**CEL parcel_name **list**
  - ✓ **STO**RE **EAS**EMENT **name** (**PAR**CEL **parcel-name**) **list**

All forms do the same task. Form 1 is a short cut to store the easement defined by the list (points and/or curves) onto the most recently stored parcel. Form 2 is a general statement to store the easement outlined by the given list in a parcel designated by parcel-name and which has been stored on an earlier occasion. Form 3 names the easement to store by the given list in a parcel designated by parcel-name and which has been stored on an earlier occasion. The area of easement is shown when the parcel is printed but its area is not subtracted from the parent tract. The advantage of utilizing taking names is they can be easily deleted in a subsequent session. If easement names are not utilized, they cannot be removed without storing the parcel again. The command below is utilized to delete a named easement.

- ✓ **DEL**ETE **EAS**EMENT **name** (**PAR**CEL **parcel-name**)

 © 2015 FDOT

- Taking Key-in Commands

The **Store Taking** command is a portion of the original parcel (parent tract) to be acquired thereof for highway purposes and it is stored as a list of elements (points and/or curves) which bounds the closed figure of said area. Any number of taking statements is allowed for the same parcel.

There are four forms to store the taking:

1. TAK list
2. TAK PARCEL parcel_name list
3. STORE TAK name list
4. STORE TAK name PARCEL parcel-name list

All forms do the same task. Forms 1 and 3 are short cuts to store the taking defined by the list (points and/or curves) onto the most recently stored parcel. Forms 2 and 4 are general statements to store the taking outlined by the given list in a parcel designated by parcel-name and which has been stored on an earlier occasion. This taking area is subtracted from the area of parent tract and the remaining area is also shown. The advantage of utilizing taking names is they can be easily deleted in a subsequent session. If taking names are not utilized, they cannot be removed without storing the parcel again.

- ✓ TAK 130 131 CUR A1 130

- Taking added to parcel 100

The command syntax to delete a taking is:

- ✓ DELETE TAK name (PARCEL parcel_name)

- Improvement Key-in Commands
  - ✓ **IMP string**
  - ✓ **IMP PAR**CEL **name string**

Both forms do the same task. Form 1 is a short cut to store the improvement onto the most recently stored parcel. Form 2 is a general statement to store the improvement in a previously defined parcel designated by name.

- Building Key-in Commands
  - ✓ BLD list
  - ✓ BLD PARCEL parcel-name list
  - ✓ STORE BLD name (PARCEL parcel-name) list

All forms do the same task. Form 1 is a short cut to store the building defined by the list (only points) onto the most recently stored parcel.

Form 2 is a general statement to store the building outlined by the given list in a parcel designated by name and which has been stored on an earlier occasion. The advantage of utilizing building names is they can be easily deleted in a subsequent session. If building names are not utilized, they cannot be removed without storing the parcel again. The command below is utilized to delete a named building.

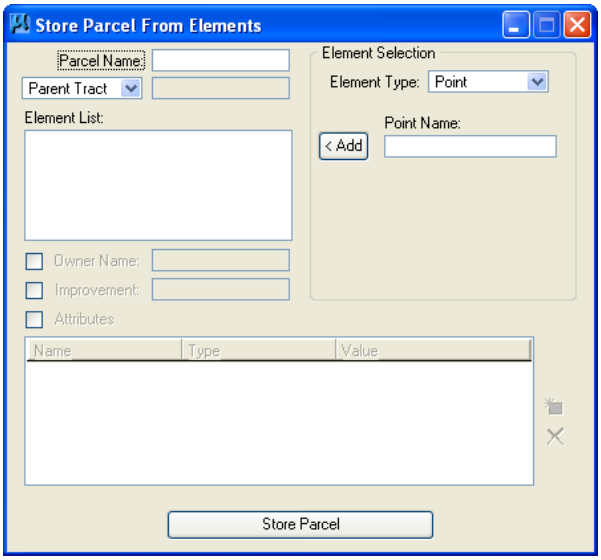
- ✓ DELETE BLD name (PARCEL parcel-name)

 © 2015 FDOT

COGO METHOD

One of the most basic methods of creating a Parcel is by grouping existing GEOPAK COGO elements such as Points, Curves, and Spirals into a Parcel. This is done through the *Store Parcel* command. The *Store Parcel From Elements* command can be accessed by selecting **Element > Parcel > Store** from the COGO Window.

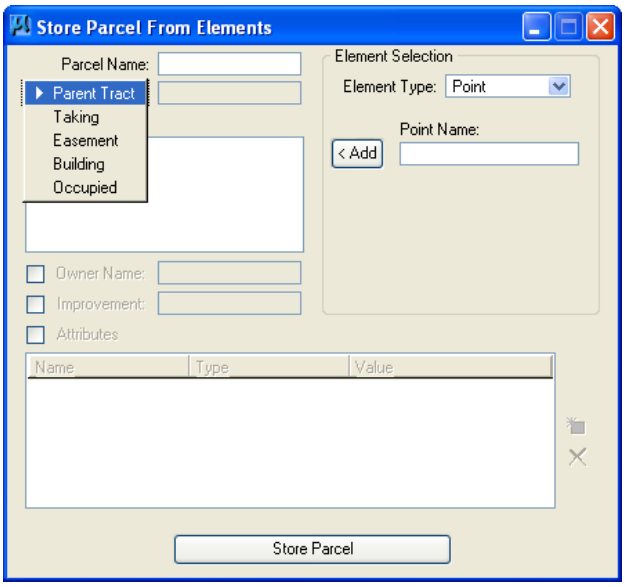
When the menu pull down is selected, the **Store Parcel From Elements** dialog will be opened as shown.



The *Store Parcel From Elements* command stores a Parcel utilizing an ordered list of its elements. Points, curves, and spirals are the only elements allowed to define the boundary of a parcel. The order of elements comprising a list must coincide with the sequence of elements comprising the parcel in a clockwise or counterclockwise direction around the perimeter. To add points to the parcel list, set the option to **Point**, then type the desired point number, and click <**Add**. To add curves or spirals, set the option to the desired element, and a list box containing all of the desired elements stored in the active project are displayed. Select the desired element and click <**Add**. Continue selecting elements followed by clicking <**Add**. When the list is complete, clicking **Store Parcel** commences storing the parcel.

In addition to allowing the user to store the sequence of COGO elements that define the Parcel, ***the Store Parcel From Elements*** command also allows the user to attach Attribute information to the Parcel such as Owner, Improvement, and custom Attributes.

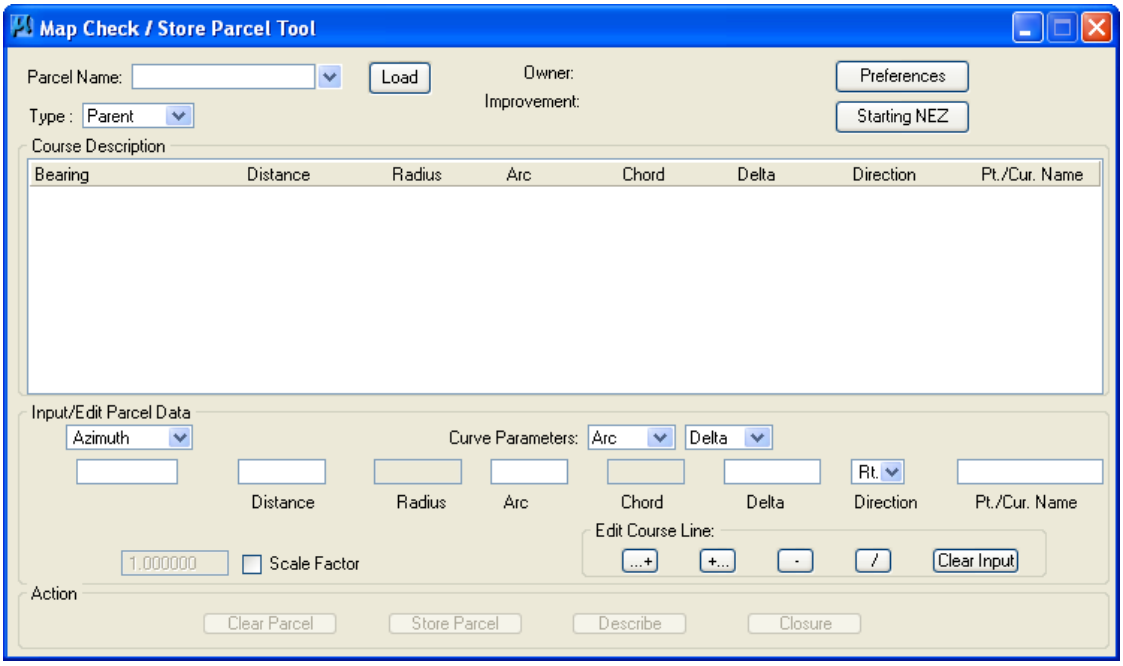
In addition to allowing the user to store the Parent Tract, the *Store Parcel From Elements* command also allows the user to store Parcel Taking, Easement, Building, and Occupied subsections. These commands are accessed by clicking the pull down under *Parcel Name* as shown. Elements are added in the same fashion as for the Parent Tract. When element entry is completed, the user clicks *Edit Parcel From Elements* to add the Taking, Easement, Building, or Occupied section to the Parent Tract definition of the Parcel.



 © 2015 FDOT

MAP CHECK

The **Map Check / Store Parcel** tool enables the user to store or edit parcels (based on directions, distances, and curve data), and compute closure. Parcels can be loaded from the coordinate geometry database or manually typed in. Once a parcel is complete, clicking **Store Parcel** stores or updates the parcel in the database.



The top section of the dialog has several important fields, as detailed in the table.

- **Parcel Name** — Key-in Combo box provides for the selection of a previously stored parcel or key in for a new parcel number.

- **Load** — If desired, a previously stored parcel may be selected. Simply select the name from the **Parcel Name** list, then press the **Load** button. GEOPAK populates all associated data within the dialog. Regardless of how the parcel was originally stored, the two specified curve parameters at the time of loading are utilized.

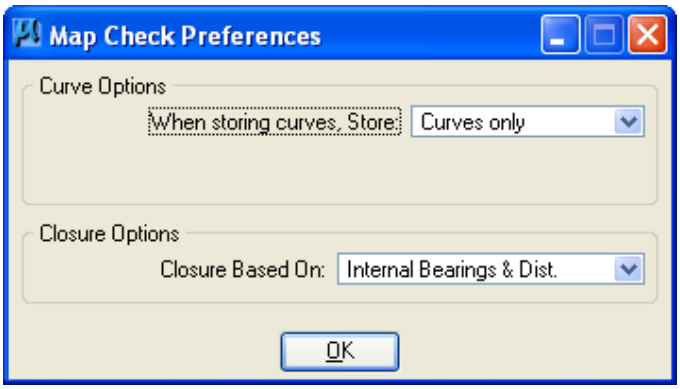
- **Curve Parameters: Radius, Arc, Chord, Delta** — Two parameters must be utilized to store curves within the parcel. Select the two desired parameters, as GEOPAK does not allow selection of the same parameter in both fields. Note: they can be changed at any time during the parcel description to enable the user to use Radius and Chord for one curve, and Delta and Arc for another.

- **Owner:** — When a previously stored parcel with attached owner is loaded, the Owner(s) are displayed. Note this is a display only field, as owners must be added within a command line in COGO.

- **Improvements** — When a previously stored parcel with attached improvement is loaded, the Improvements are displayed. Note this is a display only field, as improvements must be added within a command line in COGO.

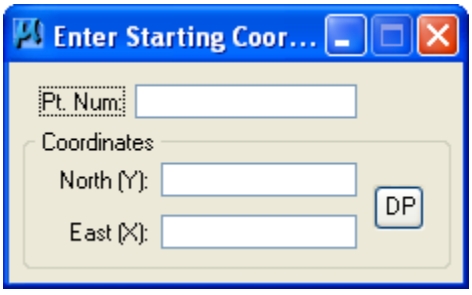
© 2015 FDOT

- **Preferences**



Compute options include **Curves Only** or **Points and curves**. When points are included, a **Starting Point** number is required. Closure options include Internal Bearing and Distance or Displayed Bearings and Distance.

- **Starting NEZ**



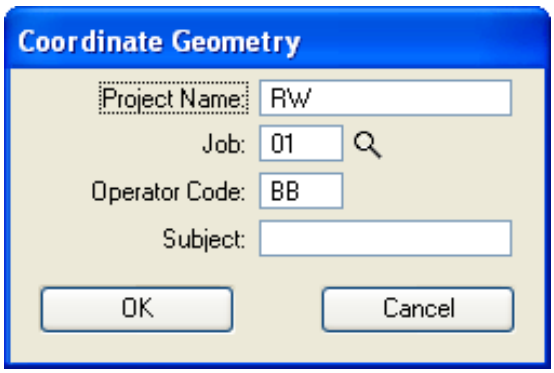
The starting point can be a COGO point, selected from a visualized element or typed into the **Pt. Num** field. When populated, the **North** and **East** are automatically displayed. If a new point number is utilized, then **North** and **East** coordinates must be entered.

GRAPHICAL COGO

Graphical Coordinate Geometry is a tool that allows the user the ability to store MicroStation elements as coordinate geometry elements into the COGO database (GPK file). Points, curves, lines, spirals, chains, and parcels can be stored, modified, or deleted. The COGO elements can be manipulated by key-in or a click of the mouse and are stored directly into the COGO database.

Note Graphical Coordinate Geometry does not read the MicroStation graphics.

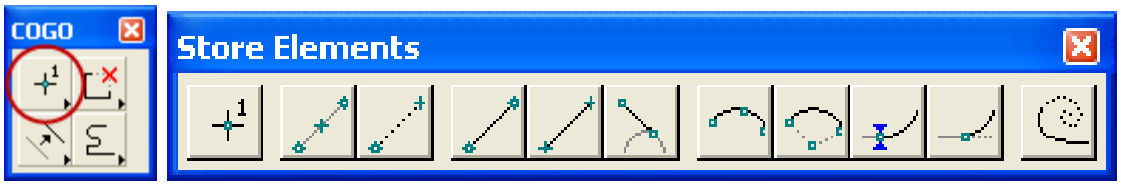
If the user attempts to access Graphical Coordinate Geometry without having the COGO database active (GPK file), the following dialog opens:



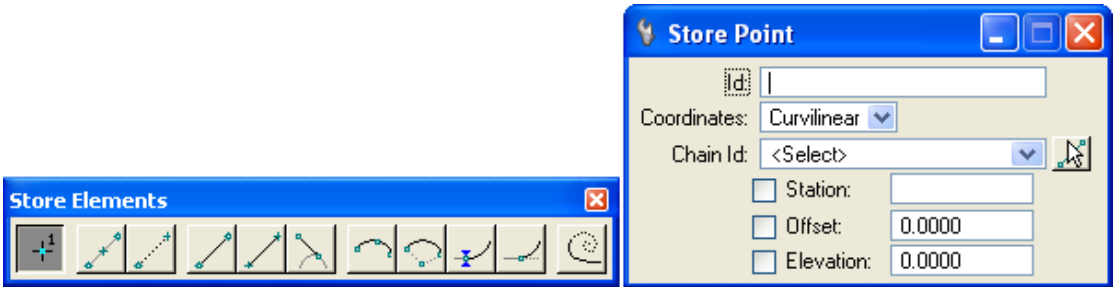
After Coordinate Geometry is activated and Graphical COGO is selected, the main tool frame displays:

- Store Elements

 © 2015 FDOT



When a command is selected, the Tool Settings dialog opens to allow the user to make key-ins if necessary as depicted next.



The Store Elements Commands are detailed in the following table .

	Store Point
	Store Equally Spaced Points
	Locate Point
	Store Line From Existing Points
	Store Line By 2 Points
	Store Tangent Line
	Store Curve By 3 Points
	Store Curve By Center
	Store Tangent Curve Constrained
	Store Tangent Curve Unconstrained
	Store Tangent Spiral

© 2015 FDOT

- Modify Elements

When a command is selected, the Tool Settings dialog opens to allow the user to make key-ins if necessary.

The Modify Elements Commands are detailed in the following table .

	Partial Delete
	Extend Plan Element
	Trim Elements
	Intersect Elements
	Extend Element
	Extend Both Elements
	Construct Circular Fillet
	Construct Chamfer
	Cut Element

- Manipulate Elements

 © 2015 FDOT

When a command is selected, the Tool Settings opens to allow the user to make key-ins if necessary.

The **Manipulate Elements** Commands are detailed in the following table.

Move Plan Element

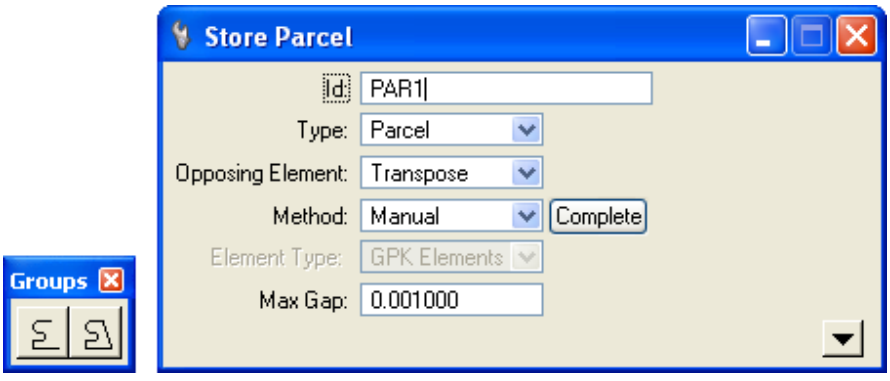
Rotate Plan Element

Copy Parallel

Delete Element

- Groups

When a command is selected, a dialog opens to allow the user to make key-ins if necessary.



The Groups Commands are detailed in the following table .

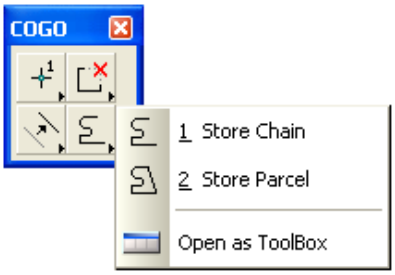
Store Chain

Store Parcel

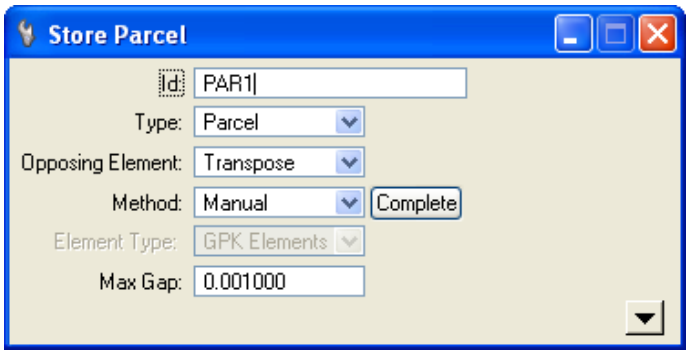
 © 2015 FDOT

- Graphical COGO Store Parcel

There is a command in Graphical COGO that allows the FDOT Right-of-Way Mapper to store Parcels (Parent Tracts) along with any related Takings, Easements, Buildings, and Occupied subsections. The Graphical COGO **Store Parcel** command can be accessed by selecting the **Store Parcel** icon from the Graphical COGO toolbar as shown.



This will bring up the Graphical COGO **Store Parcel** tool dialog which is shown.



The Store Parcel tool enables the user to store parcels, takings, easements, and other types of right of way features. A parcel must be stored prior to storing taking, easements, etc.

To store a Parcel:

1. Manually enter the **ID** (name) of the parcel if not using the default (next available) Parcel ID. Select the **Type**, i.e., **Parcel**, **Building**, **Easement** or **Taking**, keeping in mind a Parcel must be stored before the rest can be completed.
2. Depending on the direction of elements which comprise the candidate parcel, some elements may need to be transposed end for end. Two options are supported for this transposition. New elements can be created, leaving the original element intact. This option is **Create**. If the original elements are not needed except for the parcel, select the **Transpose** option. In this option, the original element is redefined as the transposition of the original element. No copy of the original element is saved. The **Create** option is suggested, due to the high likelihood of shared boundary elements.
3. Two methods are supported: **Automatic** or **Manual**. When using **Automatic**, identify the first element of the parcel, and GEOPAK traces around all connecting elements until closure is obtained. When using the Manual method, all elements must be identified in the order of the parcel.
4. Set the **Maximum Gap**. If two elements have a space between their endpoints less than the **Maximum Gap**, they are considered coincident and the parcel is stored. However, if the two elements have a space between their endpoints greater than the **Maximum Gap**, GEOPAK assumes they are not connected; therefore the parcel stops and does not include the element on the far side of the gap. The **Maximum Gap** is defined in terms of master units, i.e., feet or meters.
5. Select any element which is part of the parcel. If the **Automatic** method is utilized, all connecting elements are highlighted and the parcel is closed. When using the **Manual** method, continue selecting elements until closure is obtained or a fork is reached. At this point, the user can select the desired path by accepting it or resetting to view other paths. GEOPAK highlights the entire parcel and displays arrows indicating the direction to be used for parcel storing.
6. GEOPAK prompts for a point of beginning to store the parcel. Moving the cursor around the parcel displays a circle. When the circle is at the desired starting point, press another data point. The parcel is stored, as depicted in the COGO output display window. Note any optional improvements in the dialog are included in the COGO description.

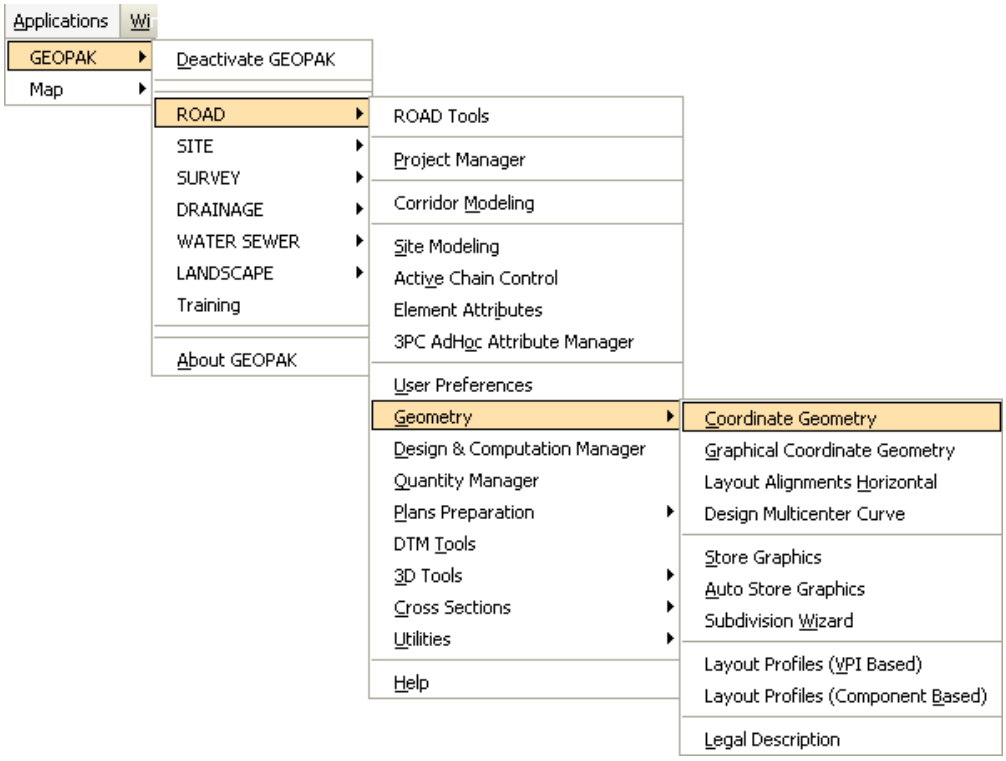
 © 2015 FDOT

Exercise 3.1 Using GEOPAK COGO

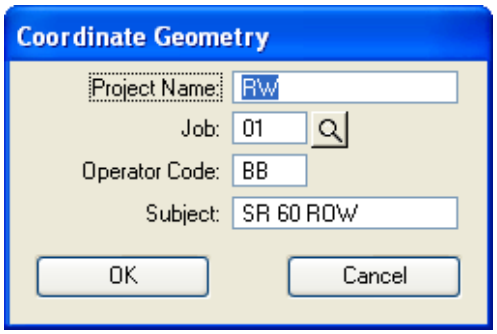
1. Open the MicroStation file C:\E\Projects\12345678901\rwmap*RW1234567.dgn*.
2. From the MicroStation menu, select **Utilities > Saved Views** and then select **TRACT D**
3. Select **Apply** and then **Close**.

Note Note: Only the data in the area of **TRACT D** has been clipped out of the RW Map. This is to help provide confirmation to the student that the **TRACT D** parcel is being created in the correct area. Normally the RW Mapper would begin with a mostly blank file.

4. From the MicroStation menu, select **Applications > GEOPAK ROAD > Geometry > Coordinate Geometry** as shown below.

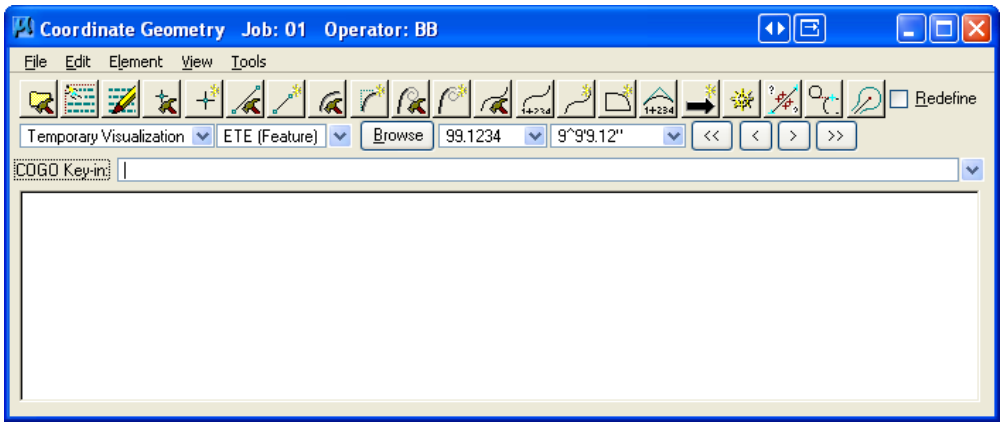


5. The Coordinate Geometry dialog will open as shown. Match the settings shown below and click **OK**.



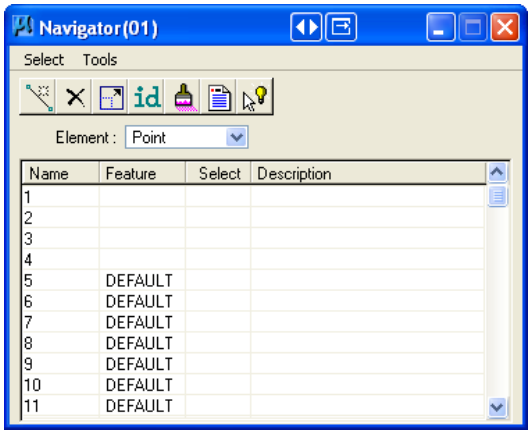
 © 2015 FDOT

6. The Coordinate Geometry displays similar to what is shown. Different icons may be displayed depending on the COGO settings last used on the computer.

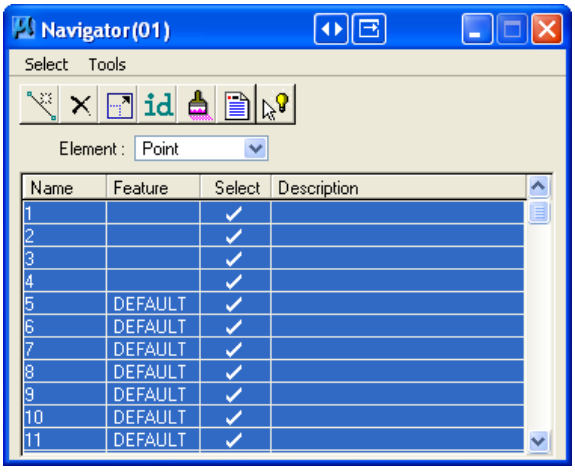


Note FDOT RW Mappers typically use **Temporary Visualization** in Coordinate Geometry. This mode automatically removes the graphics produced by Coordinate Geometry when the MicroStation DGN file is closed.

7. Select the menu option **Tools > Navigator** to open the Navigator dialog as shown below. If necessary, select the *Element* pull down and change the type to **Point**.



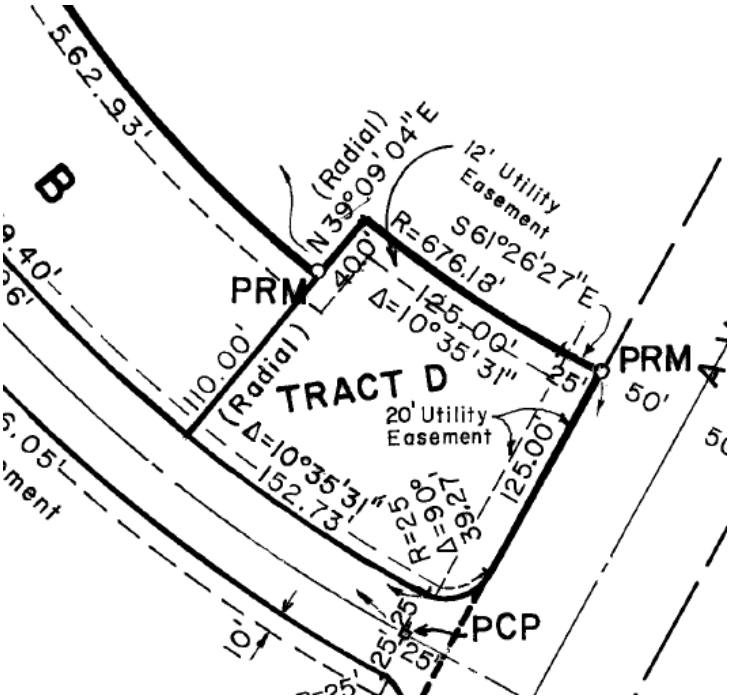
8. Select the menu option **Select > Select All** to highlight all *Point Elements* as shown below.

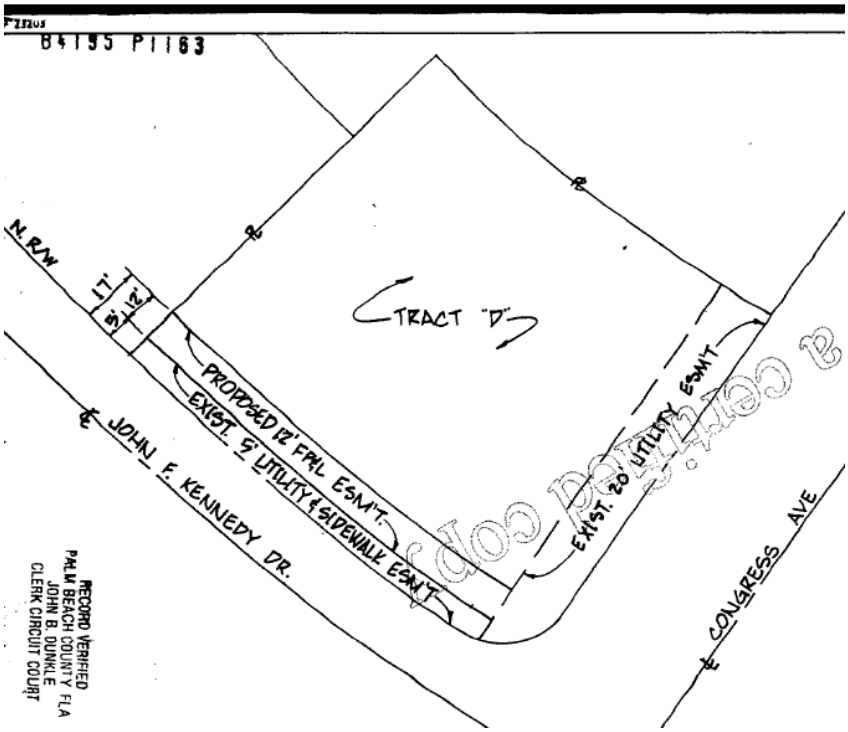


 © 2015 FDOT

9. Click the **Visualize Element** icon to visualize all GEOPAK COGO Points into the MicroStation drawing.

10. **TRACT D,** which includes a **12' Florida Power and Light Easement** and a **Corner Clip,** needs to be entered into the COGO database. **TRACT D** is a part of a plat filed in the records of the City of Atlantis, Florida. A sketch of **TRACT D** and the proposed **FP & L** easement is shown below. Hard copies of these documents are available from the instructor if needed.





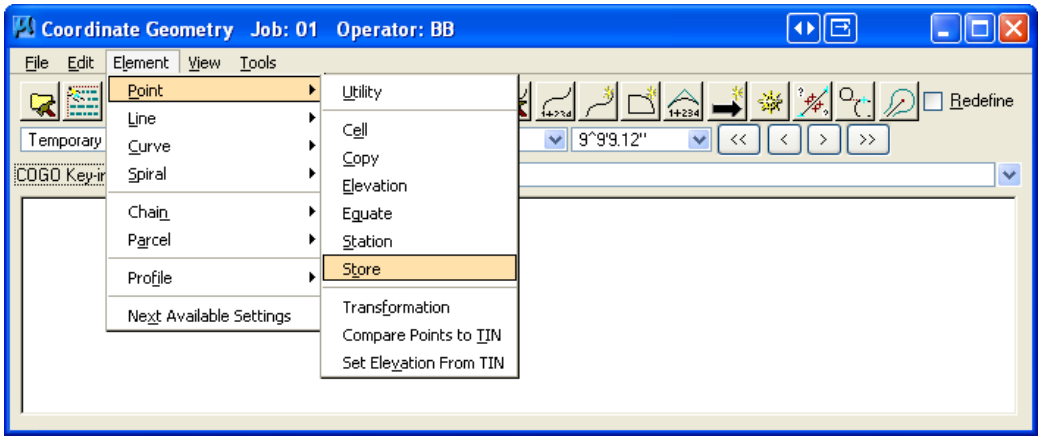
 © 2015 FDOT

11. Most of the points needed for **Tract D**, the **FP&L** easement, and the **Corner Clip** have already been field located and stored. However some additional field work has located the following points which need to be entered into the COGO database. The points to be stored are shown below.

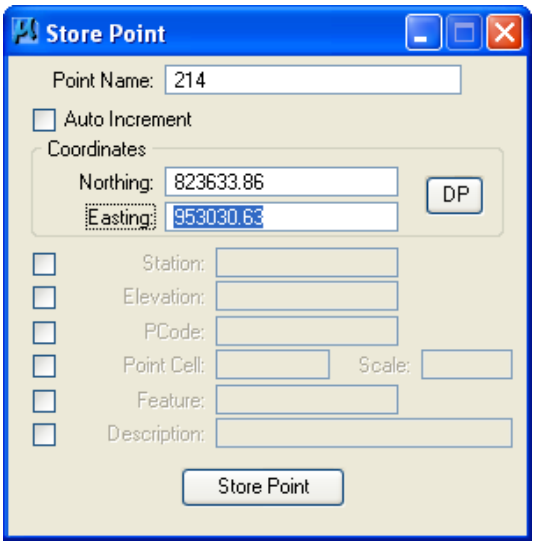
Point Number	Northing	Easting
214	823633.86	953030.63
760	823702.41	952908.89
761	823633.32	953007.09
1406	823719.26	952907.68
1506	823619.08	952820.19
1507	823529.10	952945.61
1508	823680.03	952873.54

Note Points are normally stored in sequential order. Points in the exercise are stored non-sequentially to more closely match points previously stored in the GPK database.

12. From the COGO menu, select **Element > Point > Store**.



13. This will open the Store Point dialog as show below. Use the **Store Point** tool to store the points in the table below. Click **Store Point** button to store each individual point into the COGO database.

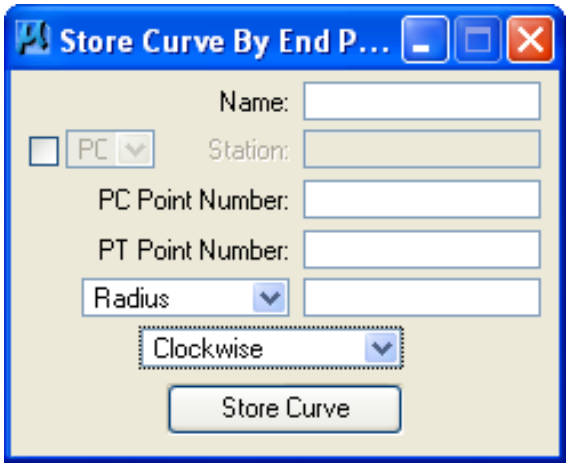


 © 2015 FDOT

Point Number	Northing	Easting
214	823633.86	953030.63
760	823702.41	952908.89
761	823633.32	953007.09
1406	823719.26	952907.68
1506	823619.08	952820.19
1507	823529.10	952945.61
1508	823680.03	952873.54

Note Points are normally stored in sequential order. Points in the exercise are stored non-sequentially to more closely match points previously stored in the GPK database

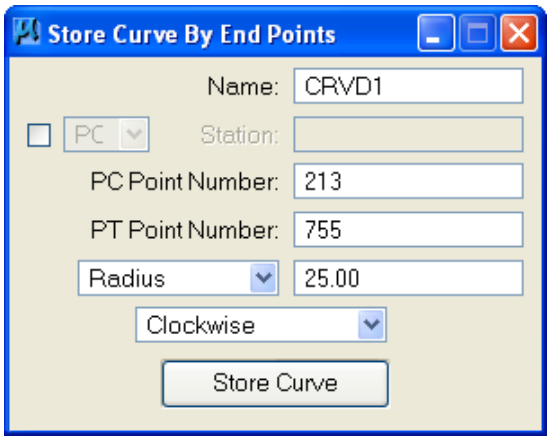
14. Now 3 curves will be stored that represent portions of the boundary of the TRACT D. To store these curves, select **Element > Curve > Store > By End Points**. This will display the Store Curve By End Points dialog as shown below.

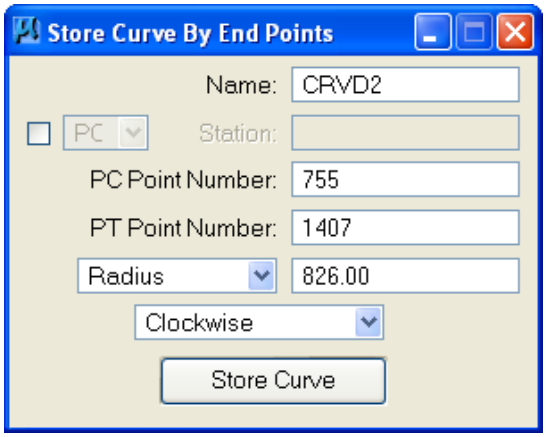


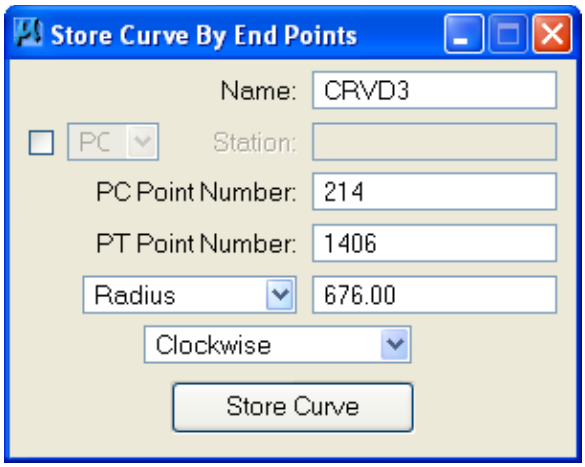
 © 2015 FDOT

15. The boundary curves to be stored and the associated dialoges are shown below. To store the first curve, match the first dialog as shown below and click **Store Curve**. Use the same process for storing the 2 remaining curves into the COGO database.

Curve Name	PC Point Number	PT Point Number	Radius	Direction
CRVD1	213	755	25.00	Clockwise
CRVD2	755	1407	826.00	Clockwise
CRVD3	214	1406	676.00	Clockwise



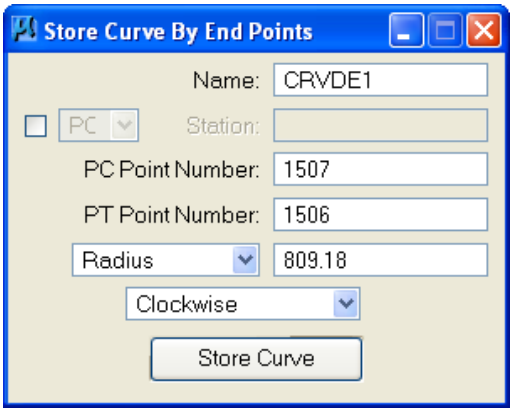


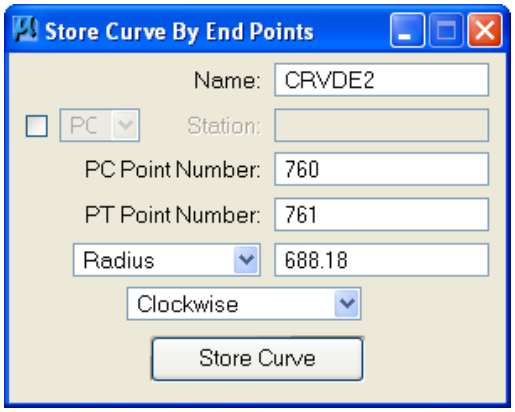


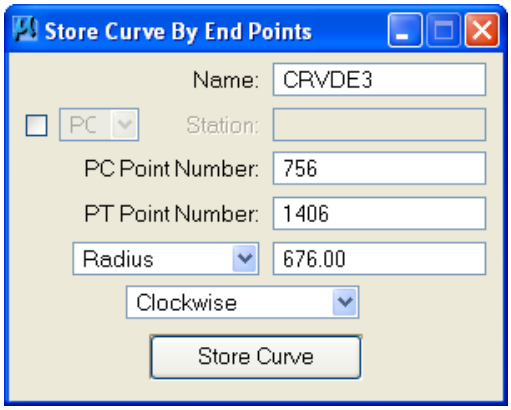
 © 2015 FDOT

16. Curves will now be stored that represent the easement portions for **TRACT D**. To store these curves, continue using the Store Curve By End Points dialog as shown below.

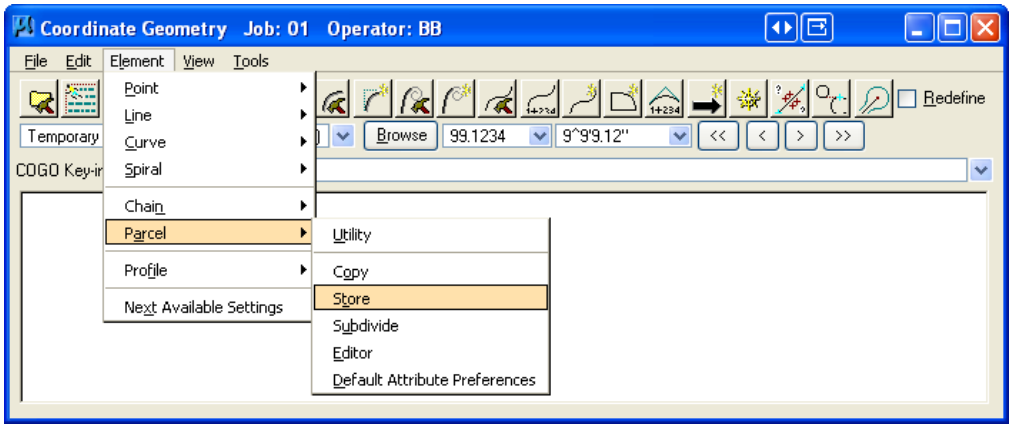
Curve Name	PC Point Number	PT Point Number	Radius	Direction
CRVDE1	1507	1506	809.18	Clockwise
CRVDE2	761	760	688.18	Clockwise
CRVDE3	756	1406	676.00	Clockwise





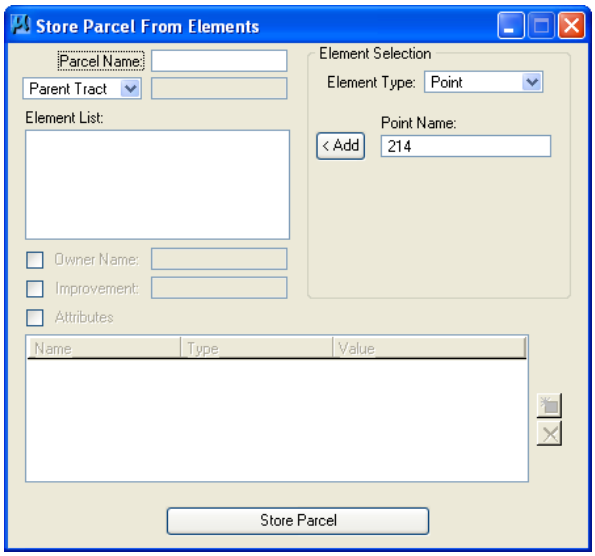


17. Now that all of the basic elements for **TRACT D**, the **FP&L** easement, and **Corner Clip** have been stored, those elements will be grouped together into a PARENT Tract that includes the easement. To do this select **Element > Parcel > Store**.

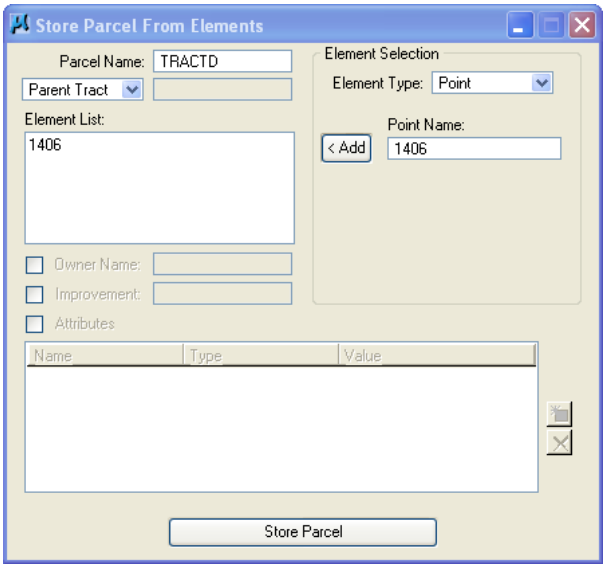


 © 2015 FDOT

18. This will display the Store Parcel From Elements dialog shown.

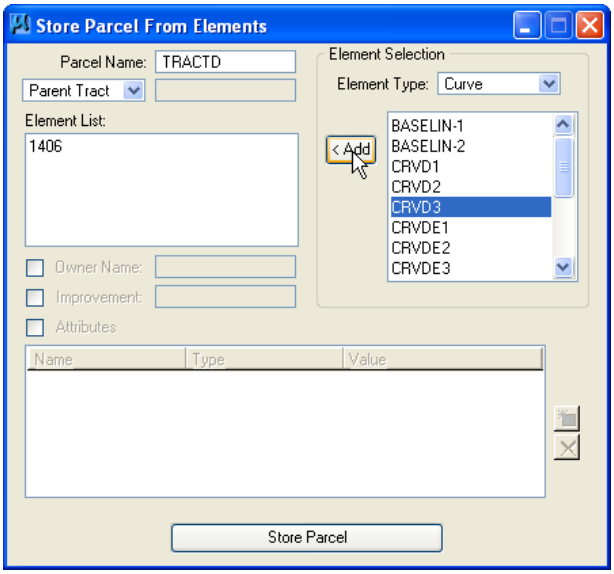


19. Set the *Element Type* to **Point** and type "**1406**" into the *Point Name* field. Click **<Add** to add point 1406 to the *Element List* for **TRACTD**.



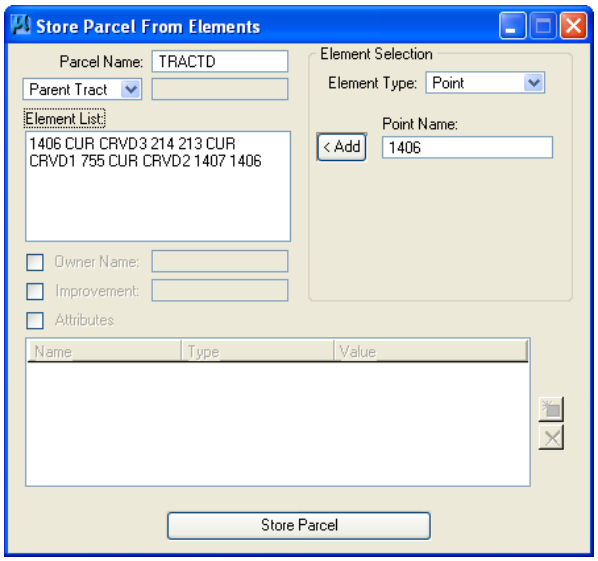
 © 2015 FDOT

20. Change the *Element Type* to **Curve** and select **CRVD3** then click **<Add** to add curve CRVD3 to the *Element List* for **TRACTD**.

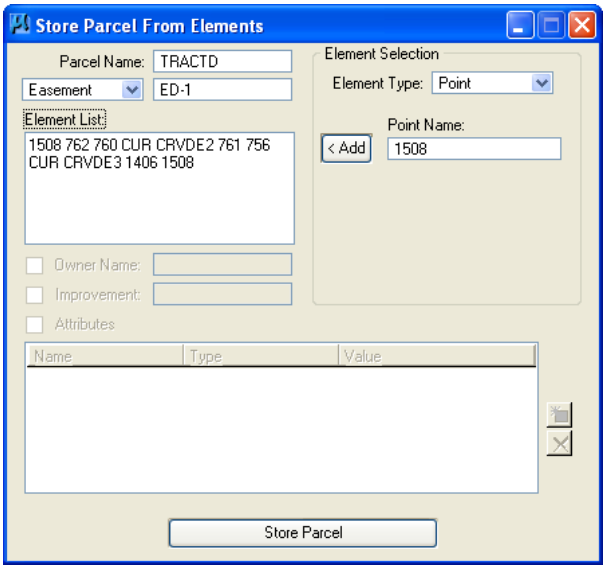


 © 2015 FDOT

21. Continue using the methods in Steps #17 and #18 to finish adding the elements to the *Element List* for **TRACTD** as shown. Click **Store Parcel** when finished to store **TRACTD** into the COGO database. **TRACTD** will be drawn into the MicroStation DGN file using the Temporary Visualization settings of GEOPAK.

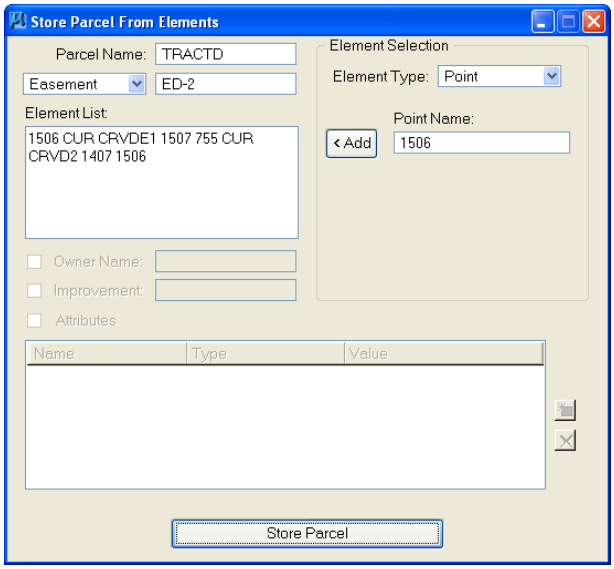


22. Now the easements for the parcel **TRACTD** will be created. Change the pull down from **Parent Tract** to **Easement** and match the dialog shown using the steps just learned. Click **Store Parcel** when done to add the easement **ED-1** to **TRACTD**.



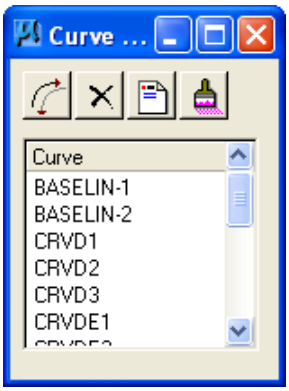
 © 2015 FDOT

23. Repeat Step #20 to store the **ED-2** easement into the **TRACTD** parcel as shown. Close the Store Parcel From Elements dialog when finished.

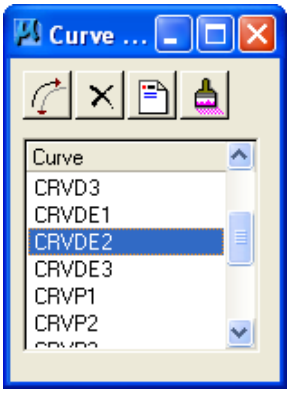


 © 2015 FDOT

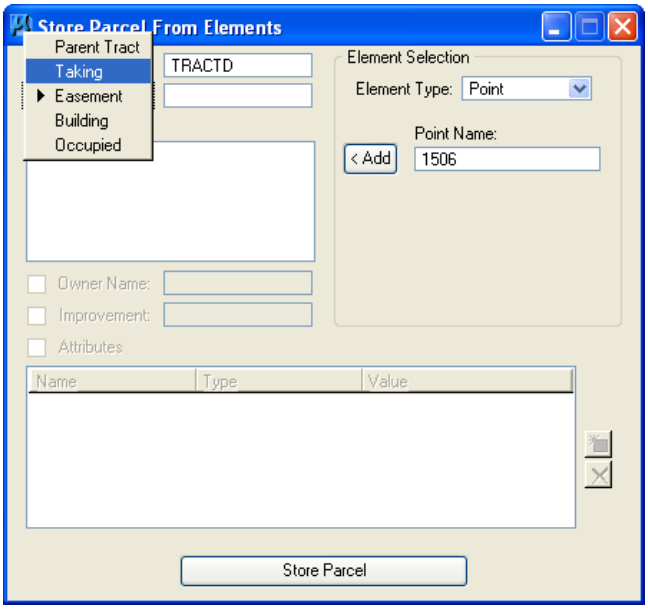
24. From COGO, select **Element** > **Curve** > **Utility**. This will display the Curve Utility dialog shown below.



25. Use the **Reverse Curve** icon to reverse the direction of curves **CRVD3**, **CRVDE1**, and **CRVDE2**. This will correct the display of the curves in the DGN file. Ensure that *Redefine* is **on**.

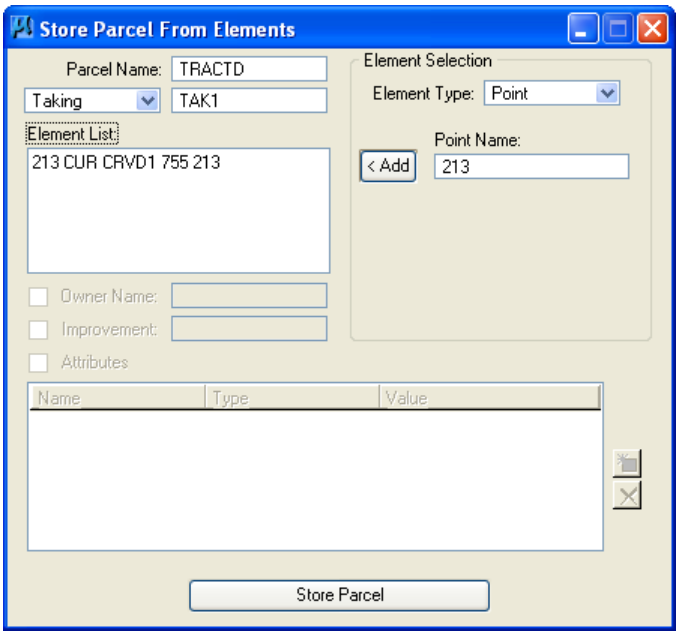


26. Continuing in the Store Parcel From Elements dialog, change the pull-down from **Easement** to **Taking** as shown below.

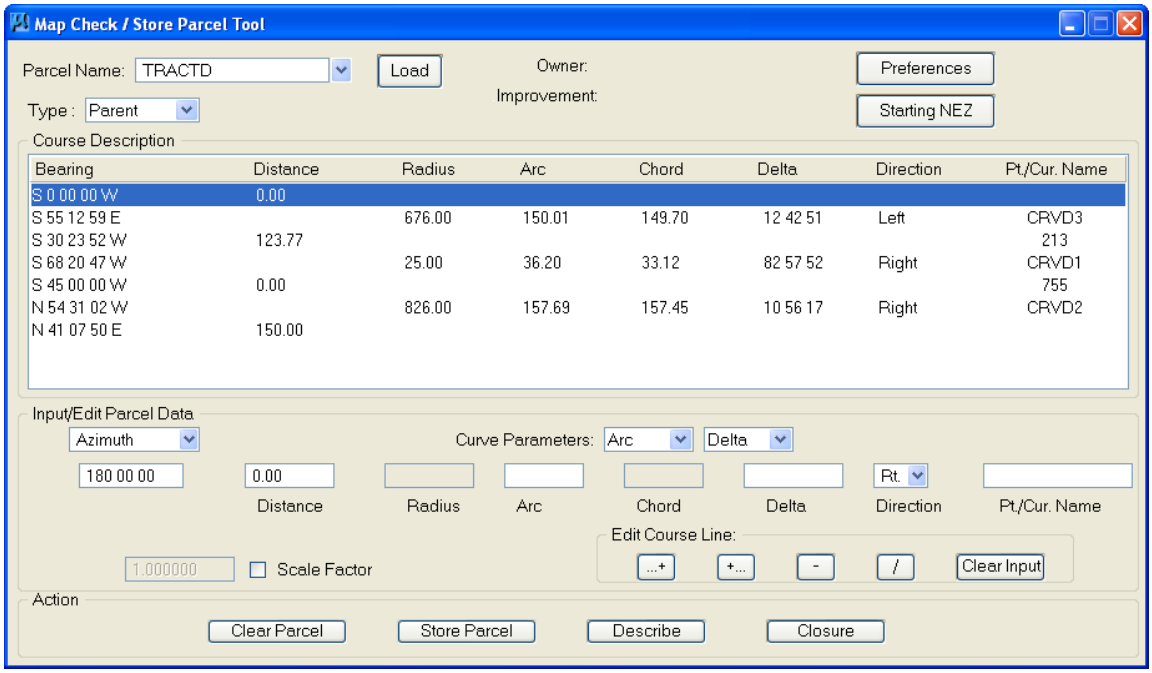


 © 2015 FDOT

27. Use the **<Add** button to add points **213** and **755** to the *Element List*. These points will form the corner clip taking for the **TRACTD** parcel. Close the Store Parcel From Elements dialog when finished.

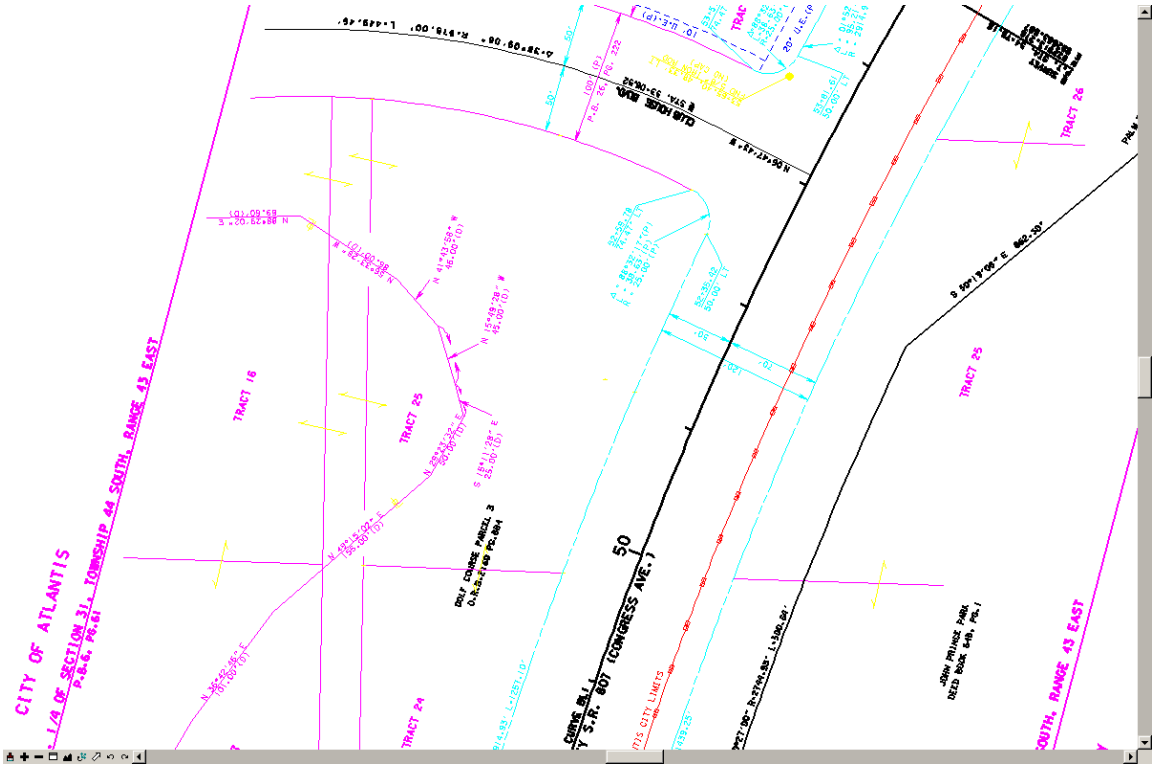


28. From the COGO dialog, select **Tools > Map Check**. From the *Parcel Name* pull down select **TRACTD** and click the **Load** button. The parcel data for **TRACTD** will be loaded into the Map Check/Store Parcel Tool. This tool can be used to create, edit, and review parcels in GEOPAK COGO. Follow along with the instructor to review **TRACTD**.

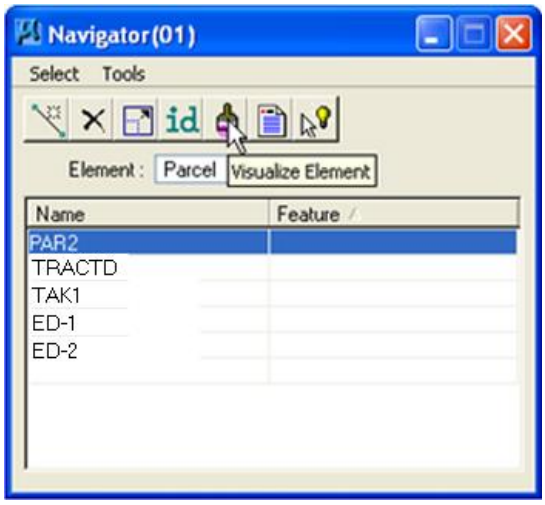


 © 2015 FDOT

29. Continuing in the *RW1234567.dgn* file, open the *Saved View* **PAR2**. The MicroStation view should display as shown below.

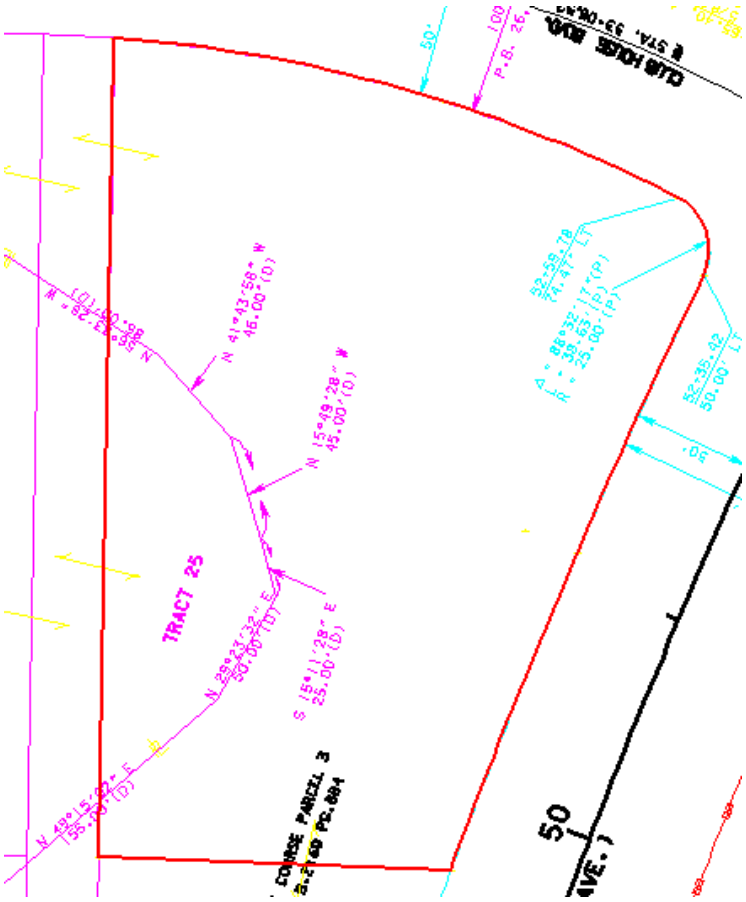


30. Using Navigator, visualize the previously stored **PAR2** parcel as shown below. A **TAKE** will be added to this parcel.

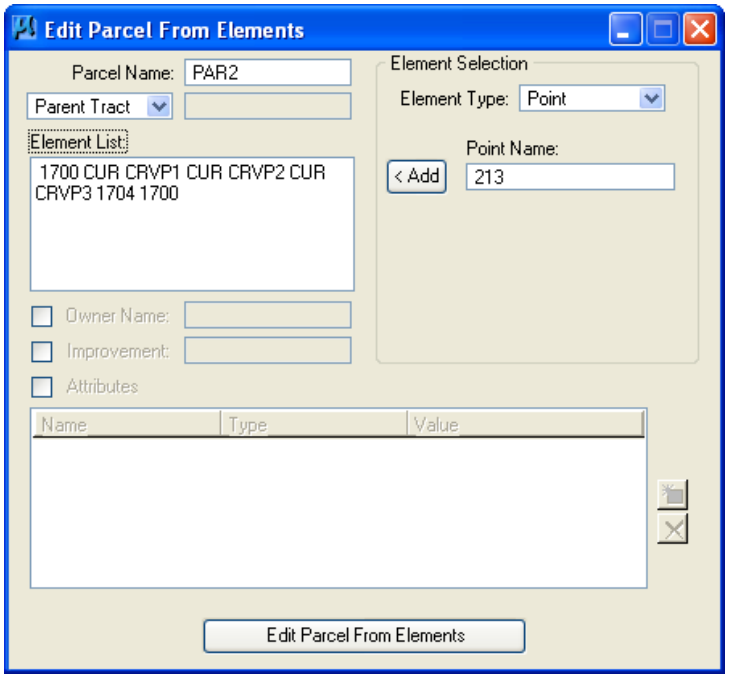


 © 2015 FDOT

31. **PAR2** will be temporarily visualized into the DGN file as shown below.

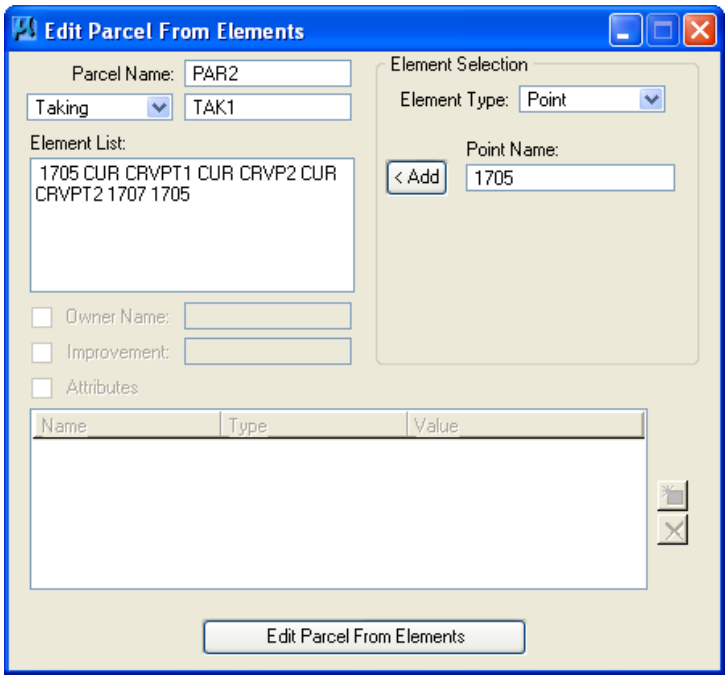


32. From Navigator, Double-click on **PAR2**. This will open the Edit Parcel From Elements dialog as shown below.



 © 2015 FDOT

33. In the Edit Parcel From Elements dialog to match the settings shown below and then click the **Edit Parcel From Elements** button. This will store the **TAK1** *TAKE* into the **PAR2** parcel.



34. Exit MicroStation and GEOPAK.

4 RIGHT OF WAY LEGAL DESCRIPTION EDITOR

OBJECTIVES

This chapter will review the Right-of-Way Legal Description Editor. Items covered will include:

- COGO Legal Description Command
- Accessing Legal Description Editor
- Global Settings
- Library Settings
- Editing Legal Description Library

INTRODUCTION

The Legal Description Editor menu selection provides the user with the ability to create two standard parcel legal description types commonly used by FDOT R/W Mapping offices. This program works in combination with GEOPAK's Legal Description Editor and therefore derives coordinate data, curve data and distance and bearing input directly from GEOPAK's Coordinate Geometry program.

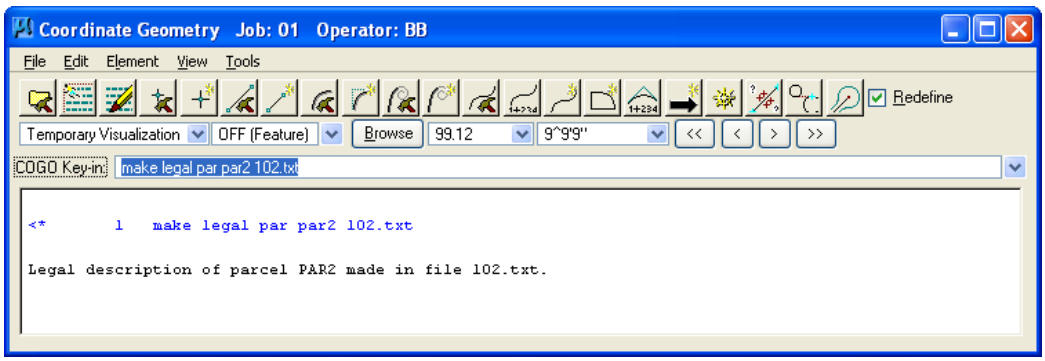
Because of the many diverse ways to compose legal descriptions it is not possible to cover all types of legal description styles within this program. But with these basic templates and the Legal Description Editor the user can compose the desired description without the possibility of transposition errors. Once the description is complete the file can be imported into the Right-of-Way Map or saved from the editor to a text file for any additional editing.

This chapter will focus on the Legal Description tools available to the FDOT Right-of-Way Mapper from FDOT Menu.

COGO LEGAL DESCRIPTION COMMAND

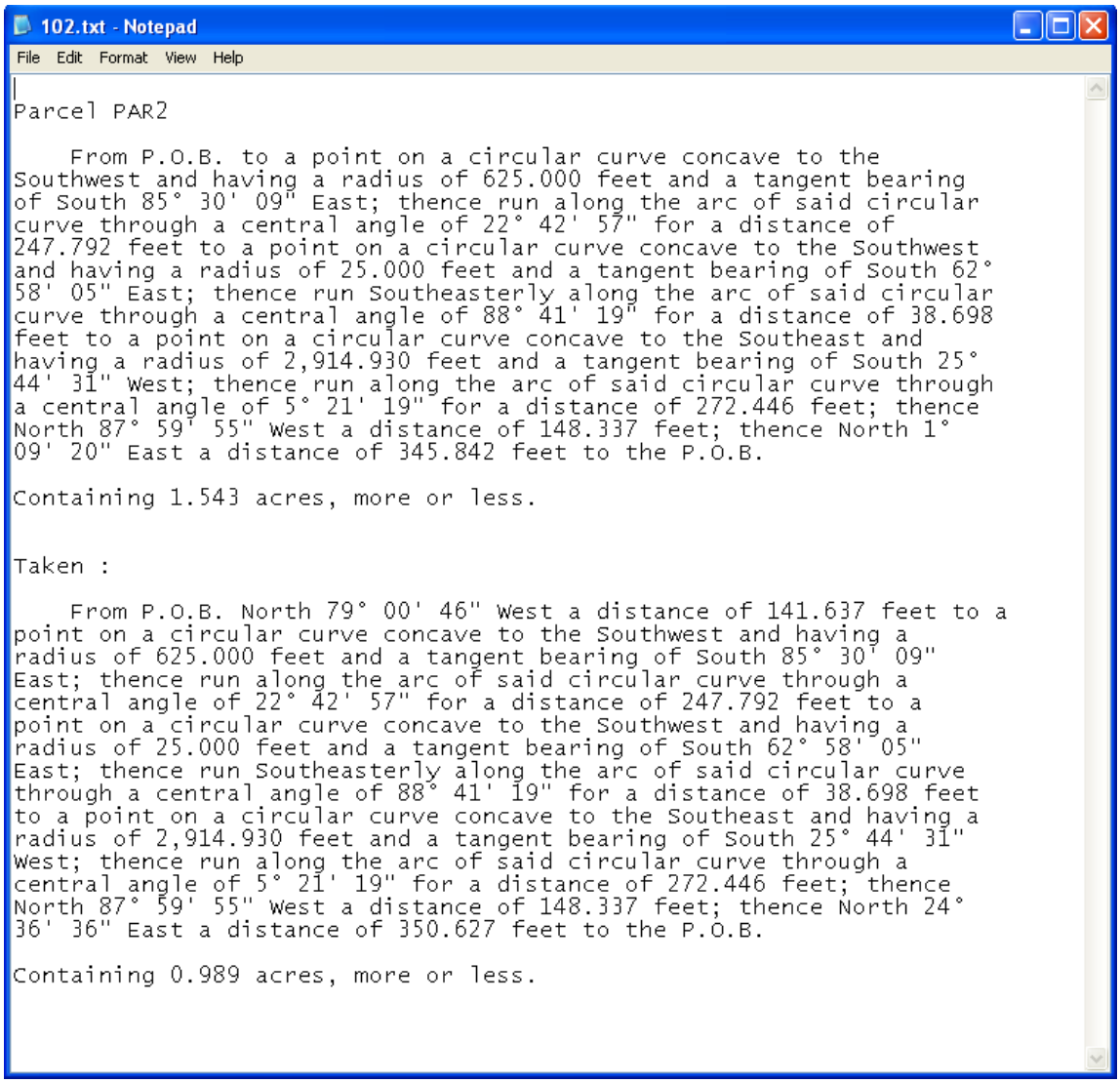
In the GEOPAK COGO window the user can issue the key-in command **MAKE LEGAL PAR <PARCEL NAME> <FILENAME>** where **<PARCEL NAME>** = parcel name in the GPK file and **<FILENAME>** = the filename to be created.

COGO Legal Description Command example:



© 2015 FDOT

COGO Legal Description File example:

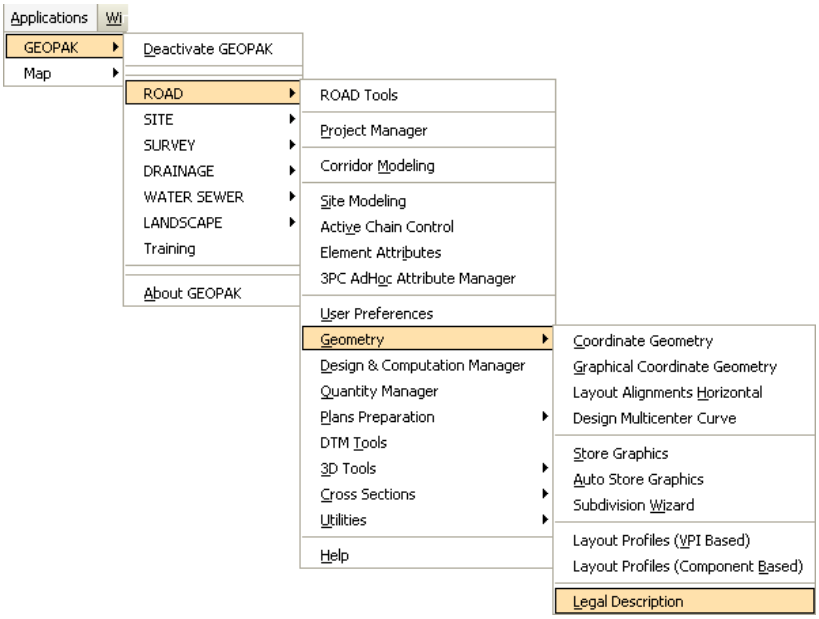


 © 2015 FDOT

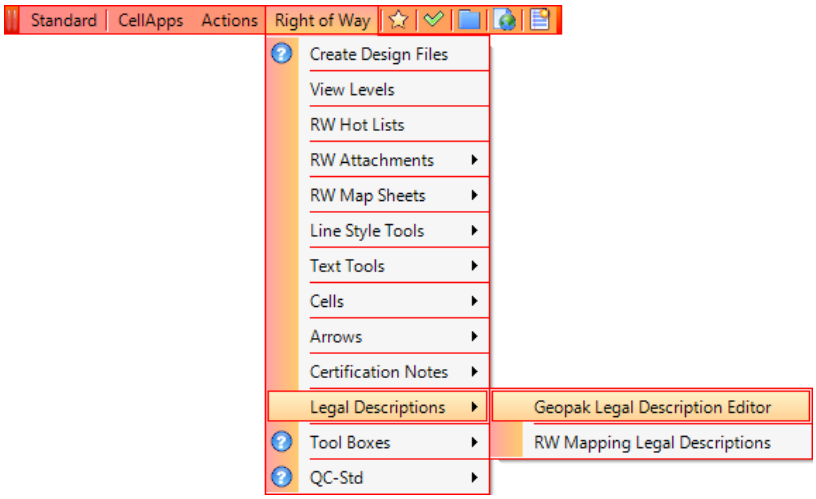
ACCESSING LEGAL DESCRIPTION EDITOR

The GEOPAK Legal Description Editor can be accessed through either the MicroStation **Applications** pull down or from the **Right of Way Menu**. Both methods are shown below.

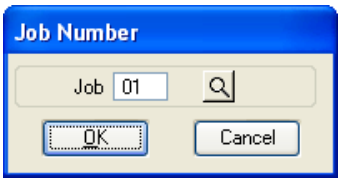
- **Applications Pull Down Method**



- **Right of Way Menu Method**

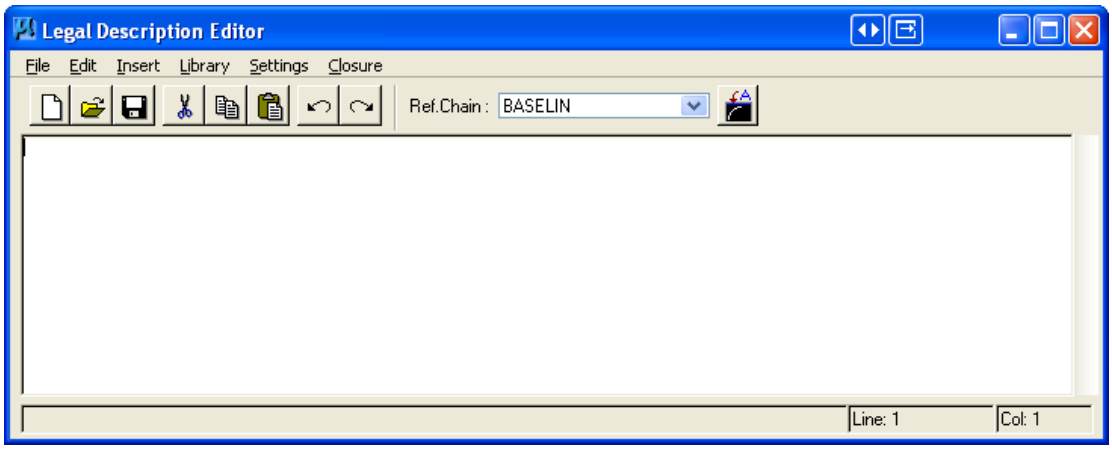


When the Legal Description Editor is accessed by selecting **Legal Descriptions > Geopak Legal Description Editor**, the Job Number dialog prompting the user for the name of the GEOPAK database will display as shown.

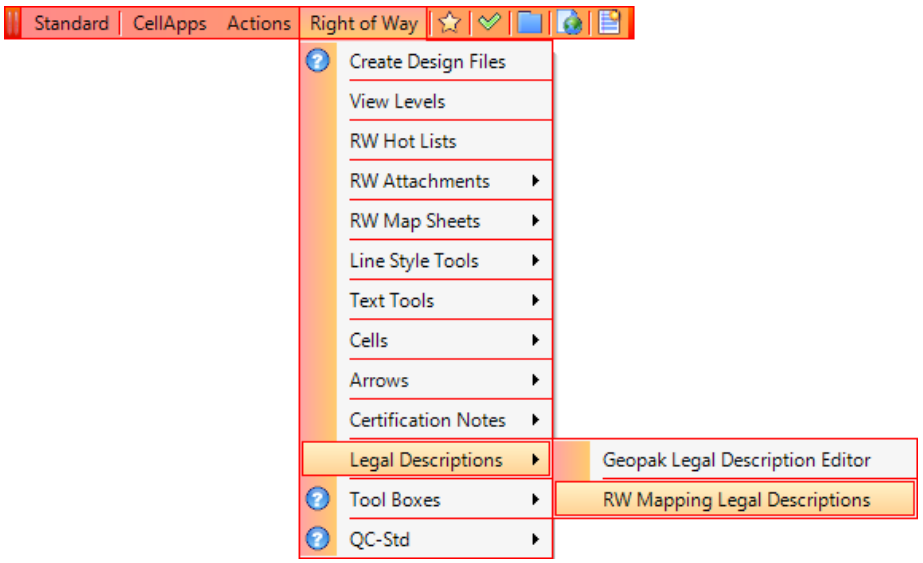


 © 2015 FDOT

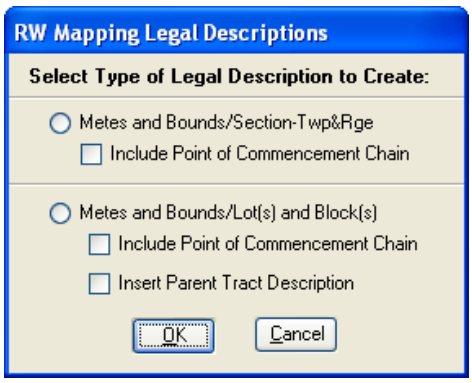
Once the desired GEOPAK database is selected, the Legal Description Editor opens.



The Legal Description Editor dialog has several pull-downs allowing for customization of the Editor and default settings for how the description will be written.



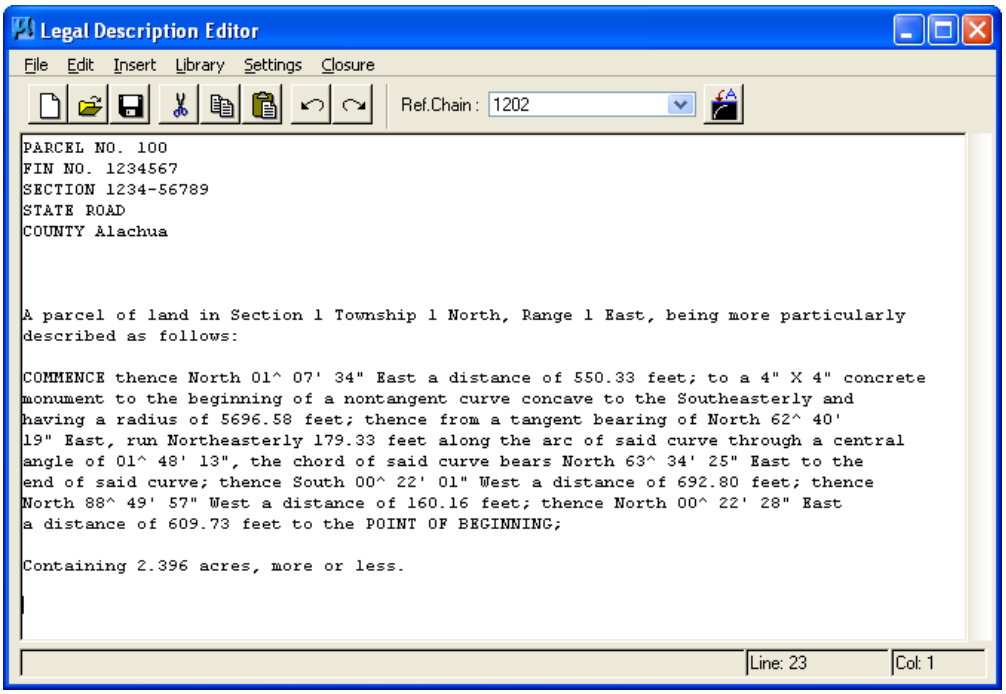
Select from the FDOT Menu **Legal Descriptions > RW Mapping Legal Descriptions**, this will open the program dialog shown below **GEOPAK Legal Description Editor must be running** for this application to work.



 © 2015 FDOT

There are two description options to select from:

1. **Metes and Bounds/Section–Twp&Rge** This selection will create a standard metes and bounds legal description contained within a defined section, township and range. The program will prompt the user for all required information to complete the legal description.



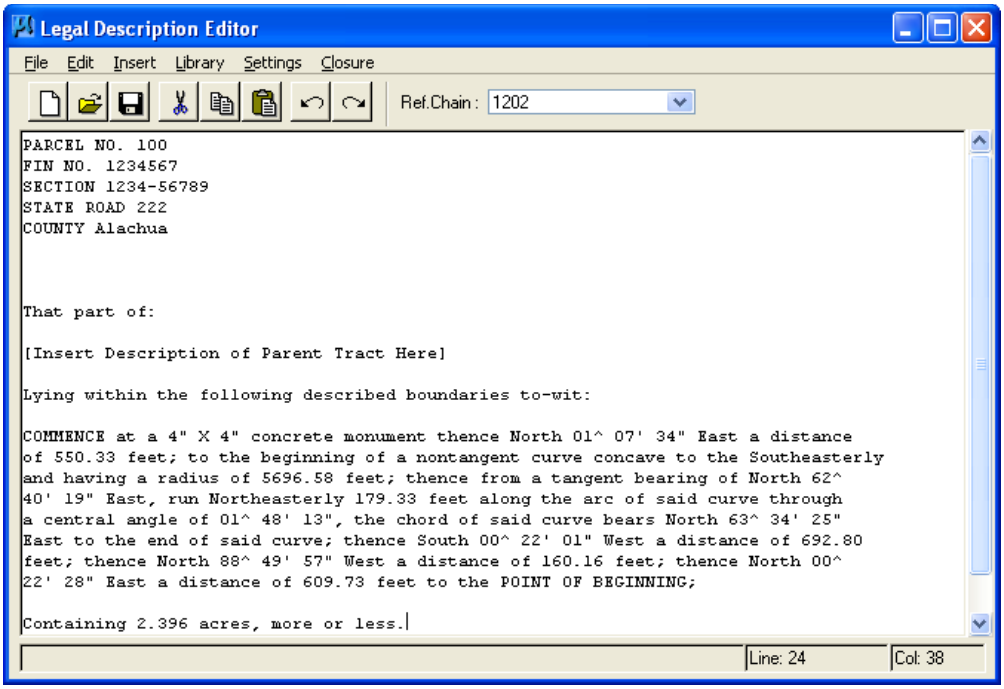
   - Include Point of Commencement Chain If this option is selected the program will prompt the user for a previously stored geometry chain name to describe the traverse from the point of commencement to the point of beginning. It is suggested the commencement chain name be described to associate the chain with the corresponding parcel, such as "100C". The resulting description will be similar to the one shown below.

2. **Metes and Bounds/Lot(s) and Block(s)** This selection will create a standard metes and bounds legal description for Lot(s) and Block(s) or for inserting a parent tract description.

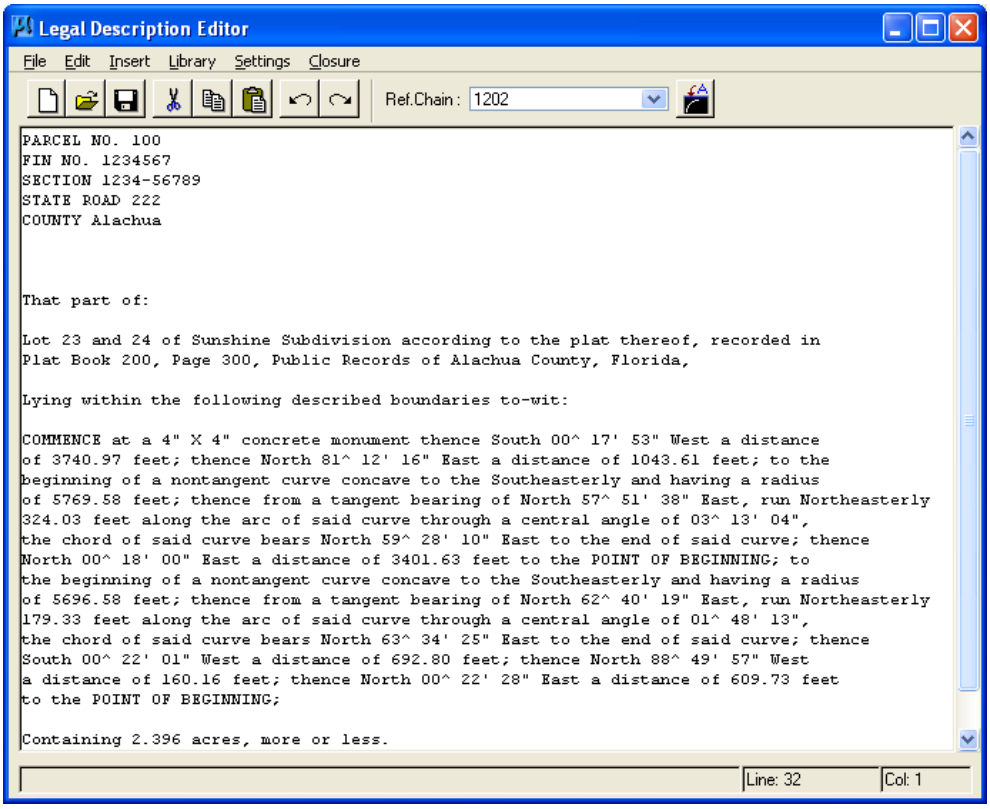
   - Include Point of Commencement Chain If this option is selected the program will prompt the user for a previously stored geometry chain name to describe the traverse from the point of commencement to the point of beginning. It is suggested the commencement chain name be described to associate the chain with the corresponding parcel, such as "100C".

   - Insert Parent Tract Description If this option is used, the program will create at the proper location a line stating "[Insert Parent Tract Description Here]". The user then has the option to manually type the tract description or cut and paste the description into the editor at the required location. The resulting description will be similar to the one shown below.

 © 2015 FDOT



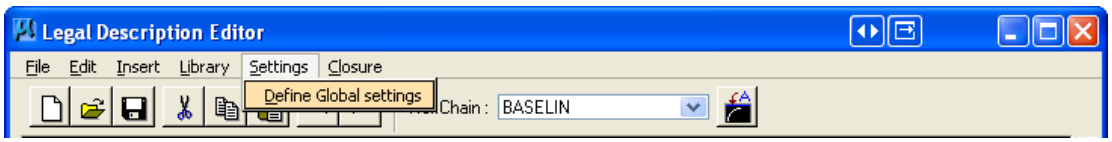
- Insert Parent Tract Description If this option is not used, the program will prompt the user to input the Lot number(s) in place of the parent tract description. The resulting description will be similar to the one shown here.



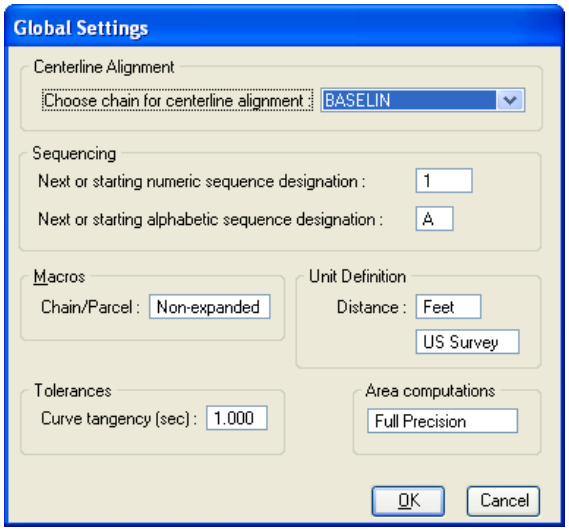
 © 2015 FDOT

GLOBAL SETTINGS

The first selection should be to define Global Settings. To define Global Settings, select **Settings > Define Global Settings** from the Legal Description Editor menu bar.



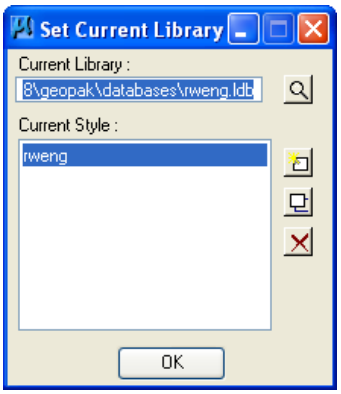
This will open the Global Settings dialog.



Most of these settings are rather self explanatory; however the most important one is the **Centerline Alignment** setting which allows the designation of COGO chain for referencing stations and offsets in the legal description.

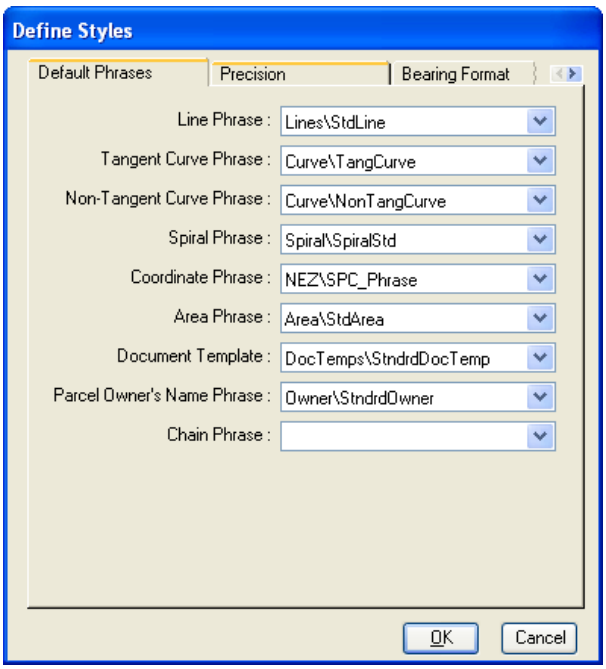
LIBRARY SETTINGS

Selecting **Library > Set Current Library/Style** menu choice allows the user to pick a library from which to work or store defaults. The Library Settings and the Legal Description Library itself are without a doubt the most important part of the Legal Description Editor. The library provides a way for the user to establish default phrases and add customized phrases to a central location for recall at any time. Multiple libraries are supported to allow for various legal description purposes such as right-of-way, condemnations, mortgage, and others.



 © 2015 FDOT

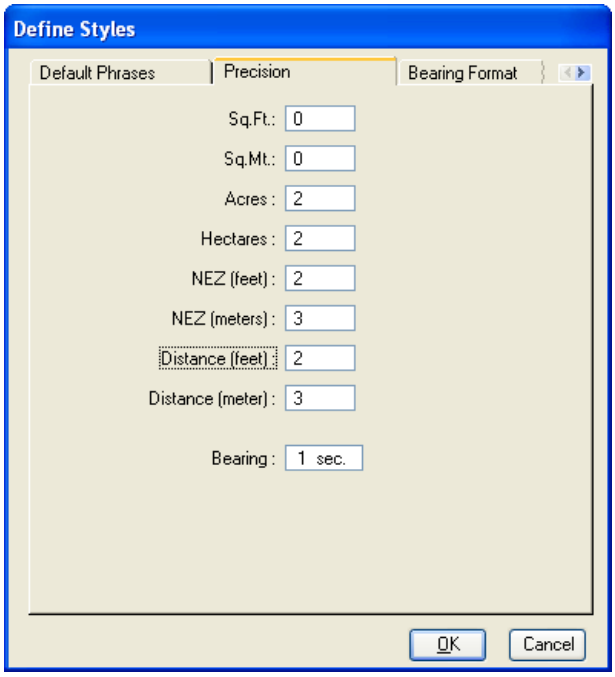
Once a Legal Description Library is chosen the Style can be edited from the dialog by clicking the **Edit** button on the Set Current Library dialog.



There are several tabs across the top of the Define Styles dialog to allow the user to make settings according to their preferences when writing a legal description using this particular style.

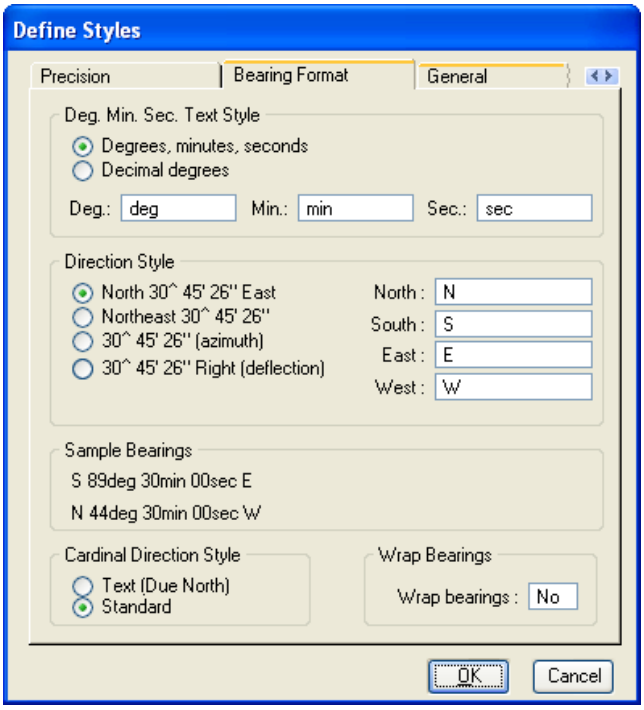
The first tab, as shown above, is for setting up **Default Phrases** for when a particular element is encountered.

The next tab, as shown next, allows the setting of **Precision** for elements that are described in the Legal Description.



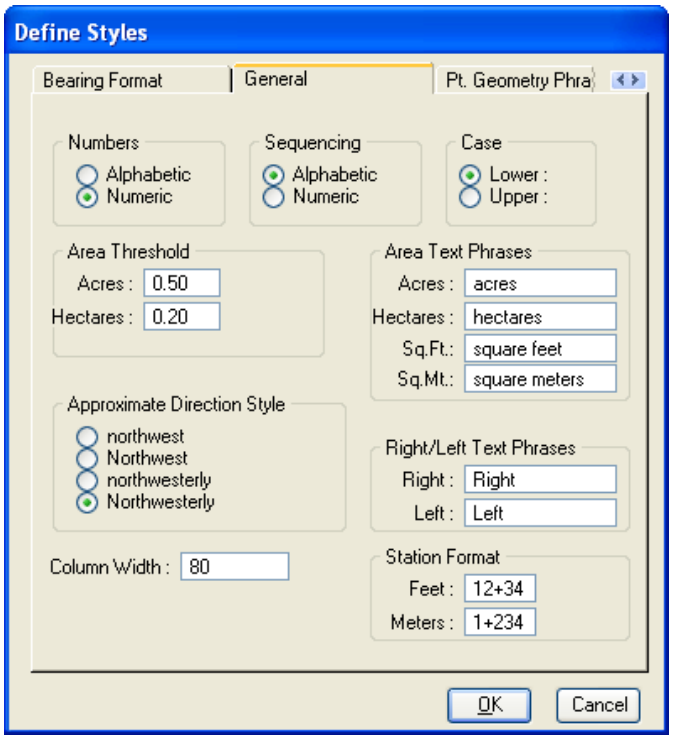
 © 2015 FDOT

The **Bearing Format** tab gives the user the flexibility to control how bearings are displayed when the Legal Description is written.



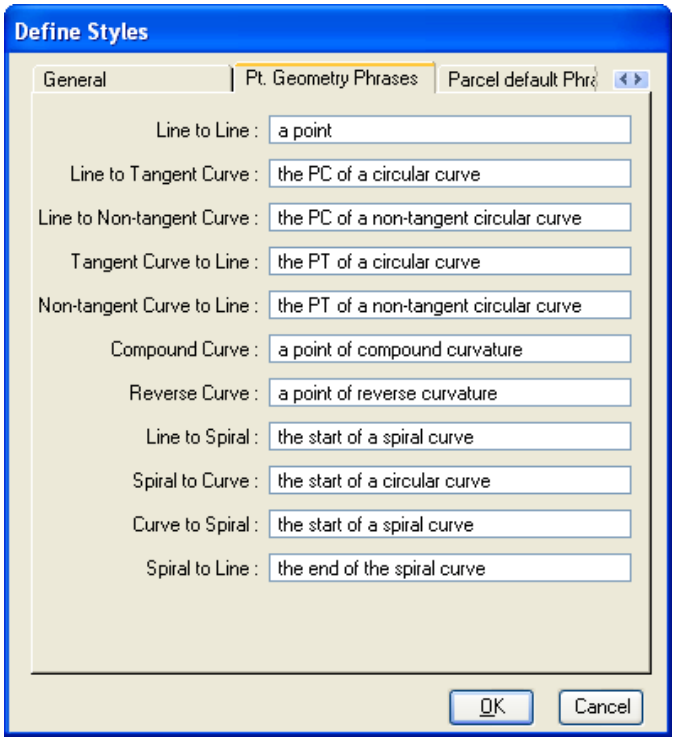
As choices are made within the **Bearing Format** tab, the user will see a sample of the desired bearing format displayed in the **Bearing Format** tab. The display will update as different choices are made.

The **General** tab provides settings for areas and directions. One of the most important settings here is the column width, as this will control the line wrapping and how the description is formatted.

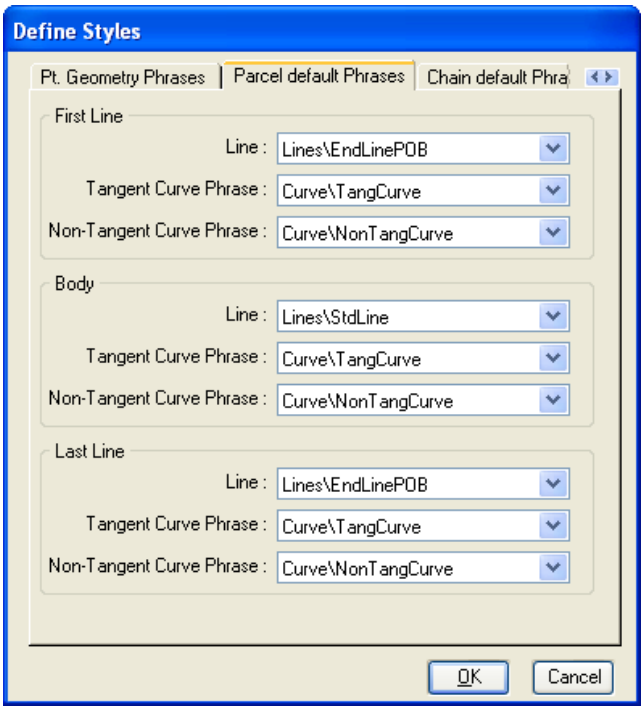


 © 2015 FDOT

The **Pt. Geometry Phrases** tab is next and allows the user to set which phrases are to be used from the Legal Description Library when the a particular element is encountered such as a Line, Tangent Curve, and others.

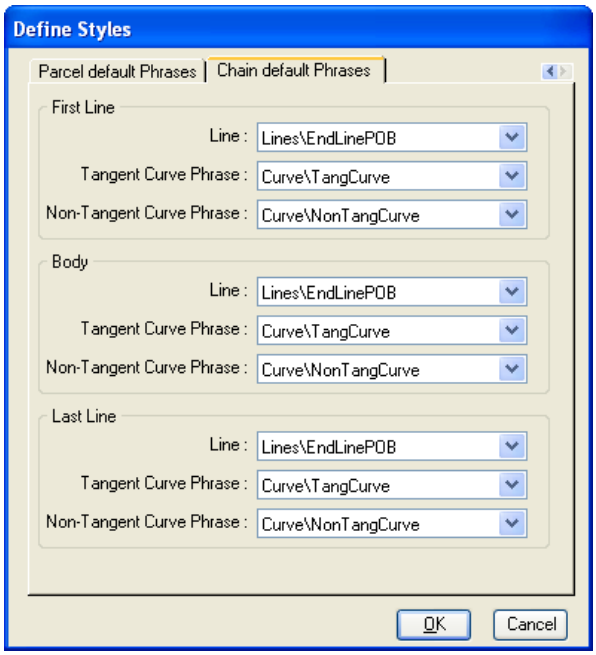


The **Parcel default Phrases** tab option is very similar to the Point Geometry Phrases in that the user can establish defaults for parcel descriptions from beginning to end. These phrases determine what line style will be used for the first line of a parcel, the body of a parcel, and the last line of the parcel.



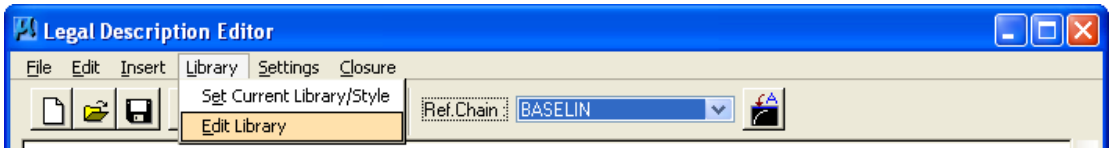
 © 2015 FDOT

The **Chain default Phrases** tab option is very similar to the **Parcel default Phrases** in that the user can establish defaults for chain descriptions from beginning to end. These phrases determine what line style will be used for the first line of a parcel, the body of a parcel, and the last line of the parcel.

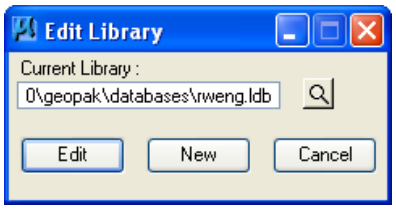


EDITING LEGAL DESCRIPTION LIBRARY

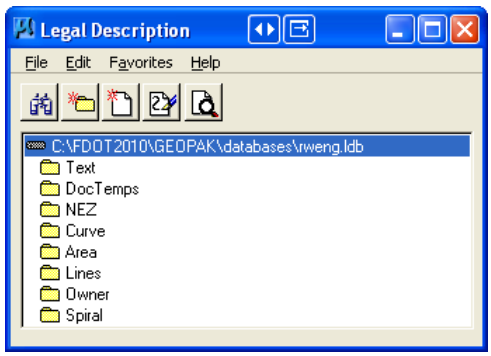
Once the Library and Style have been selected the user can edit or add to the selected Library. The Legal Description Library is where the standard phrases are created and stored. To edit the Legal Description Library, select **Library > Edit Library** from the main menu of the Legal Description Library as shown.



After selecting **Library > Edit Library**, the user must confirm which library to edit.

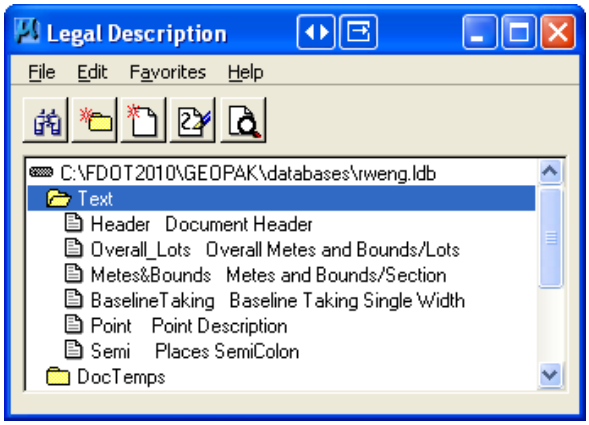


The following dialog will display once the desired library is selected and the **Edit** button is selected.



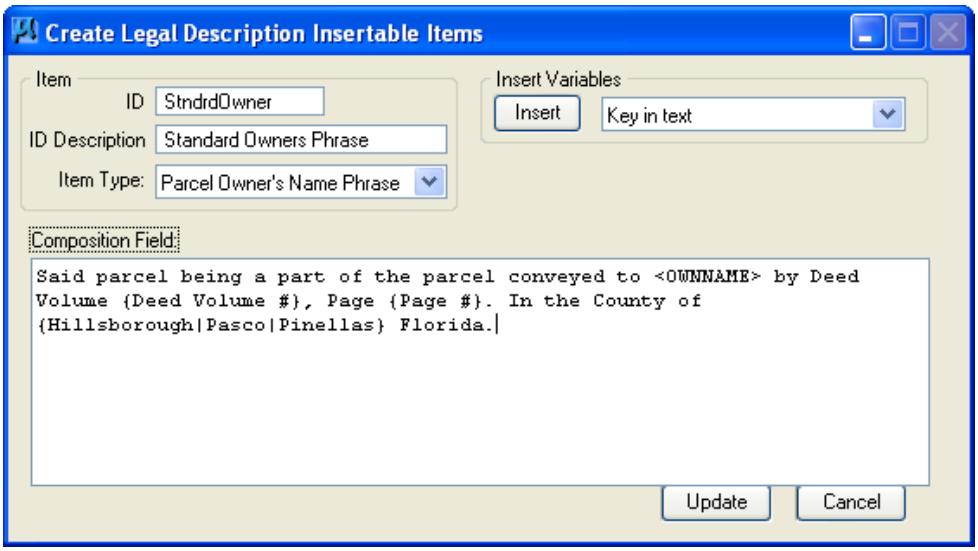
 © 2015 FDOT

The setup of the Legal Description dialog is very similar to the SMD file and the DDB files also used by GEOPAK. The Legal Description Library is a hierarchical database allowing the user to create categories and items to be used when writing Legal Descriptions. In the next dialog, the category **Text** has been created with a variety of standard clauses setup within the **Text** folder.



The **Text** clauses will be available for selection when writing the legal description and automatically inserted into the description if chosen by the user. The icons in the upper portion of the dialog are used for creating and editing items and categories and perform the same functions as they do in GEOPAK's SMD and DDB editor.

Next is the item **StndrdOwner** that has been setup. The item has the text <OWNNAME> which extracts the variable OWNNAME from a stored Parcel and inserts this into the Legal Description. The text {Deed Volume #} and {Page #} create prompts for the user to fill out as part of the Legal Description. The text [Hillsborough|Pasco|Pinellas] prompts the user to select from a list of counties to insert.

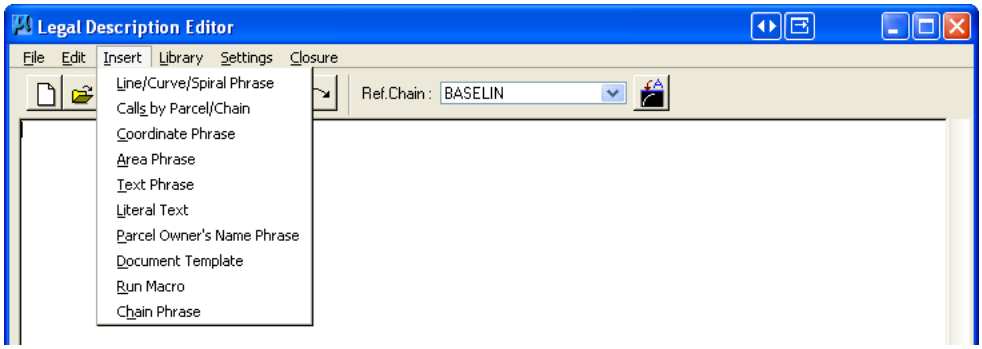


 © 2015 FDOT

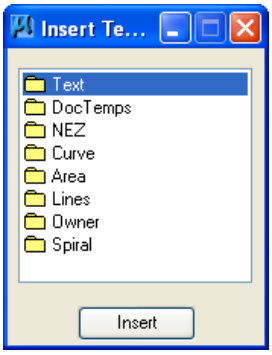
INSERTING PHRASES

When the library has been setup and stored the user is ready for writing a legal description. This is done by selecting from the Insert pull-down.

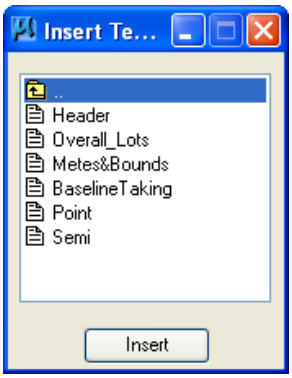
The user uses the insert option to select the desired type of phrase to insert. Once selected, dialogs will display allowing for the selection of that particular type of phrase from the items that were saved in the library.



For example, a Text Phrase could be selected and the following dialog opens.

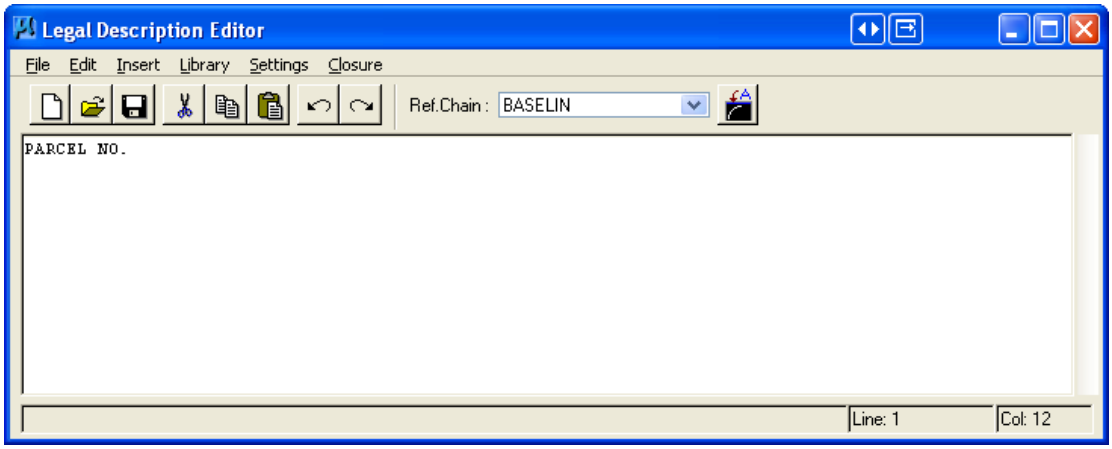


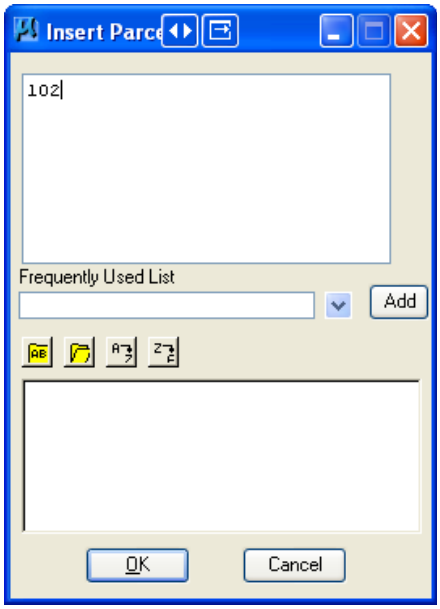
The user then selected the type of Text Phrase such as Text… and then the following dialog displays allowing for the selection of the desired clause.



 © 2015 FDOT

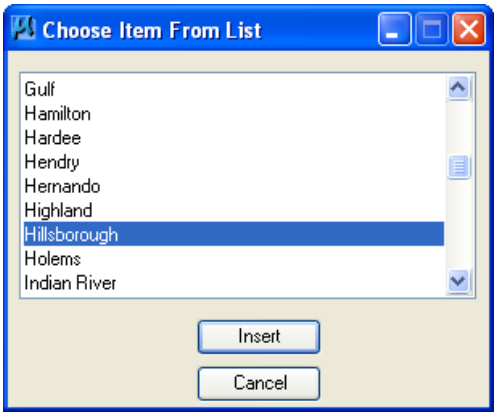
Once highlighted and **Insert** is clicked, the phrase will be inserted into the description in its entirety. In this case, part of the phrase is automatically placed in the description and then the user is prompted to provide some variable information.





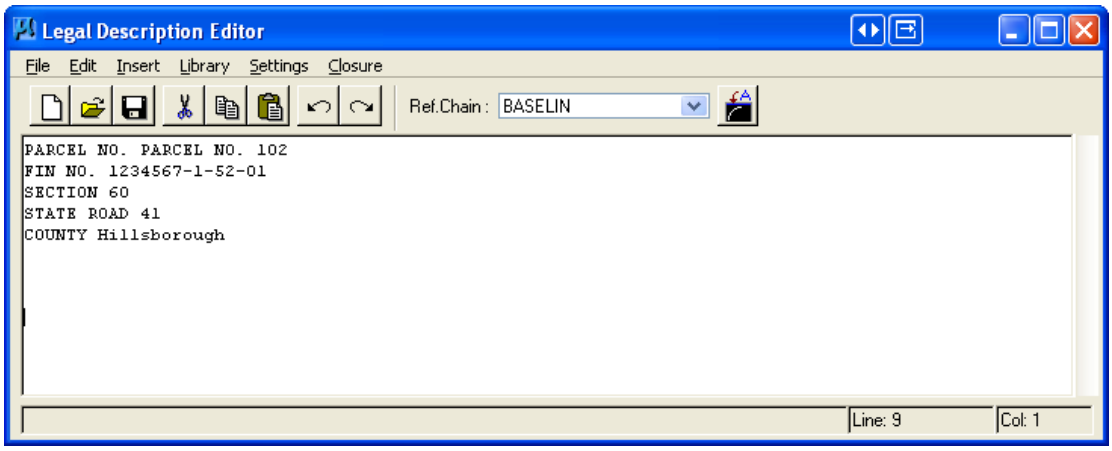
Notice the top bar of the secondary dialog is asking for a Parcel Number. When keyed-in, it will be placed in the description and the program will continue building the standard text until another variable is encountered.

In this case, once the parcel is provided, you are prompted for additional information to key-in or select from a list as another variable is encountered. In this case the user is prompted to select from a list of known options, (counties).



 © 2015 FDOT

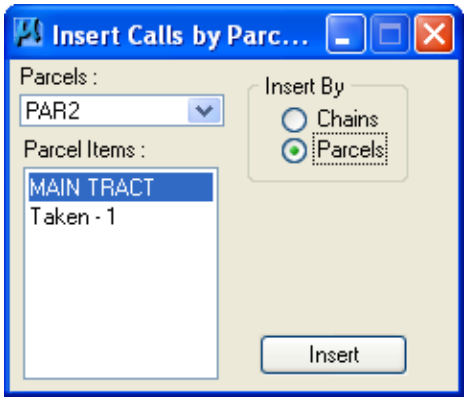
Here, the user can see the final product of inserting this one phrase.



Remember the above dialog is simply an editor and the user has the option of typing anything in it to supplement or modify what an insert has placed there.

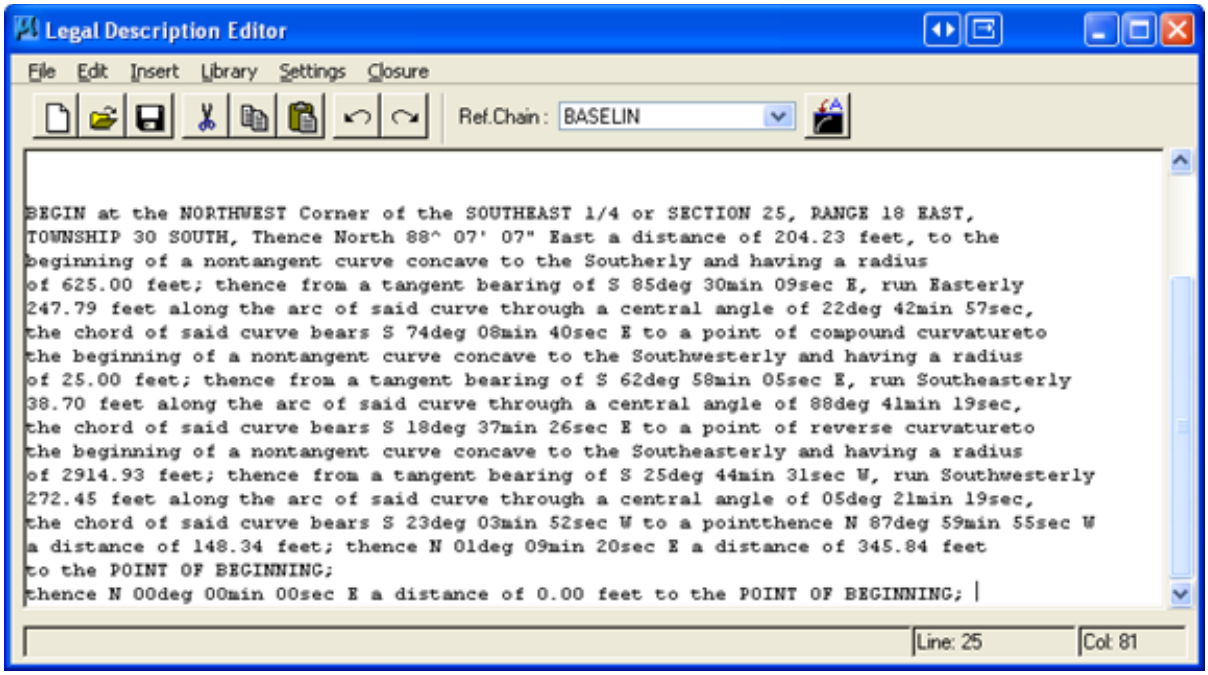
The last thing to remember is that the user should use the **File>Save** option to save your completed legal description and then import into Microsoft WORD or any editor of your choice.

To insert the entire metes and bounds of a stored parcel, return to the Insert options and select the Calls By Parcel / Chain option. This will invoke the following dialog.



The user must then select whether it is a chain or a parcel he wishes to describe; then, click Insert. This will continue the writing of the description.

 © 2015 FDOT

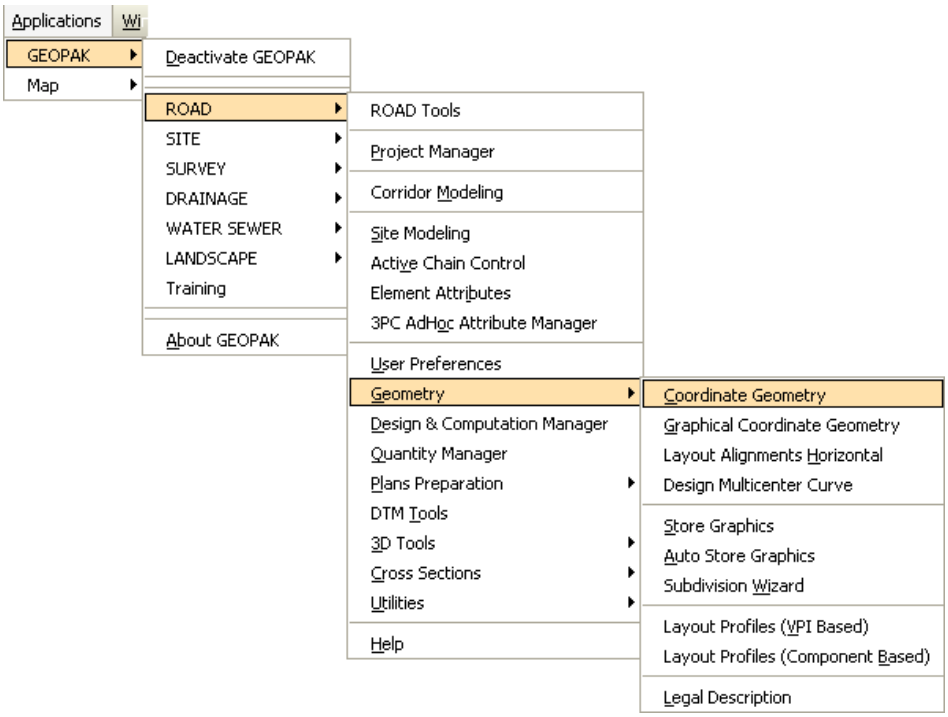

Legal Description Editor
File Edit Insert Library Settings Closure
Ref.Chain : BASELIN
BEGIN at the NORTHWEST Corner of the SOUTHEAST 1/4 or SECTION 25, RANGE 18 EAST,
TOWNSHIP 30 SOUTH, Thence North 88^ 07' 07" East a distance of 204.23 feet, to the
beginning of a nontangent curve concave to the Southerly and having a radius
of 625.00 feet; thence from a tangent bearing of S 85deg 30min 09sec E, run Easterly
247.79 feet along the arc of said curve through a central angle of 22deg 42min 57sec,
the chord of said curve bears S 74deg 08min 40sec E to a point of compound curvatureto
the beginning of a nontangent curve concave to the Southwesterly and having a radius
of 25.00 feet; thence from a tangent bearing of S 62deg 58min 05sec E, run Southeasterly
38.70 feet along the arc of said curve through a central angle of 88deg 41min 19sec,
the chord of said curve bears S 18deg 37min 26sec E to a point of reverse curvatureto
the beginning of a nontangent curve concave to the Southeasterly and having a radius
of 2914.93 feet; thence from a tangent bearing of S 25deg 44min 31sec W, run Southwesterly
272.45 feet along the arc of said curve through a central angle of 05deg 21min 19sec,
the chord of said curve bears S 23deg 03min 52sec W to a pointthence N 87deg 59min 55sec W
a distance of 148.34 feet; thence N 01deg 09min 20sec E a distance of 345.84 feet
to the POINT OF BEGINNING;
thence N 00deg 00min 00sec E a distance of 0.00 feet to the POINT OF BEGINNING;
Line: 25
Col: 81

 © 2015 FDOT

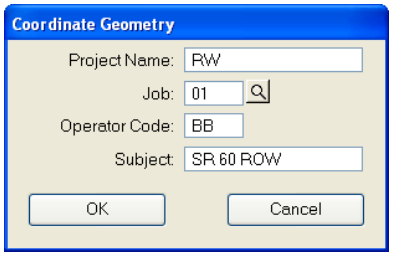
Exercise 4.1 COGO Legal Description Command

➢ *Creating a Legal Description Using COGO*

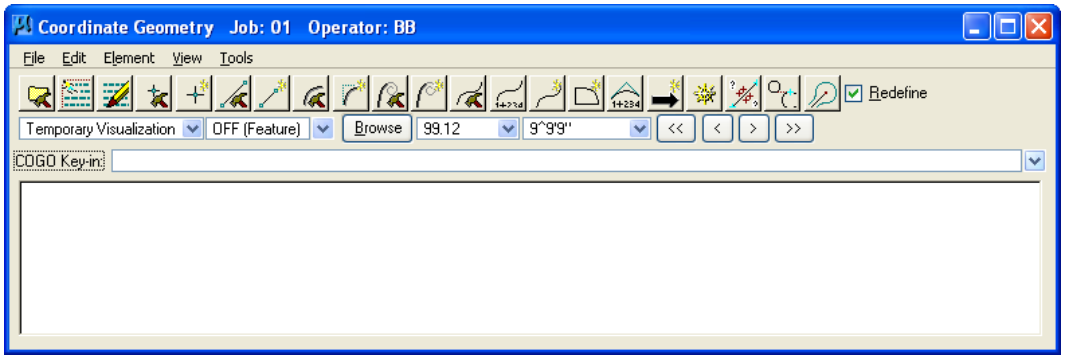
1. Open the MicroStation file C:\E\Projects\12345678901\rwmap*rw1234567.dgn*.
2. Open the GEOPAK Coordinate Geometry dialog using the method shown below.



3. Match the Coordinate Geometry settings as shown below and click **OK**.

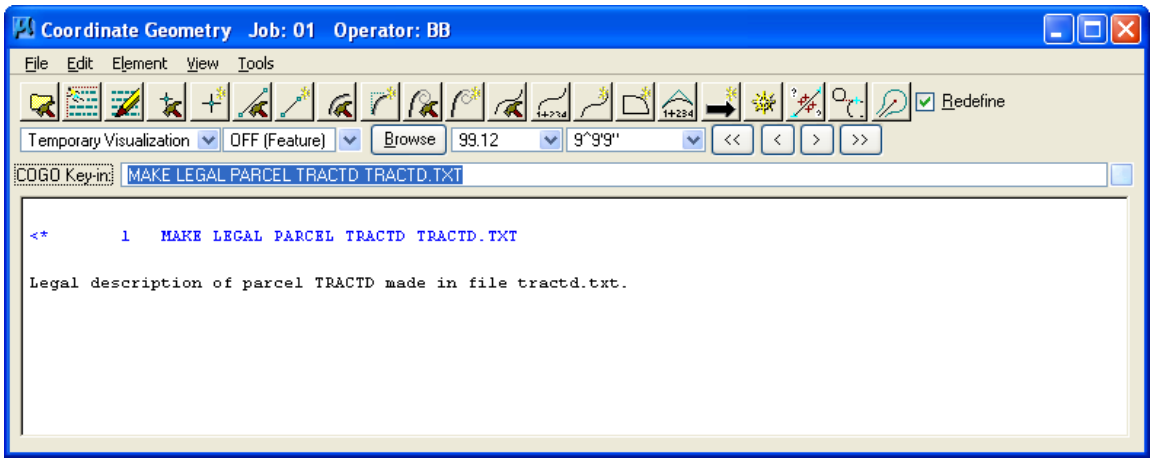


4. The Coordinate Geometry dialog displays similar to what is shown below.

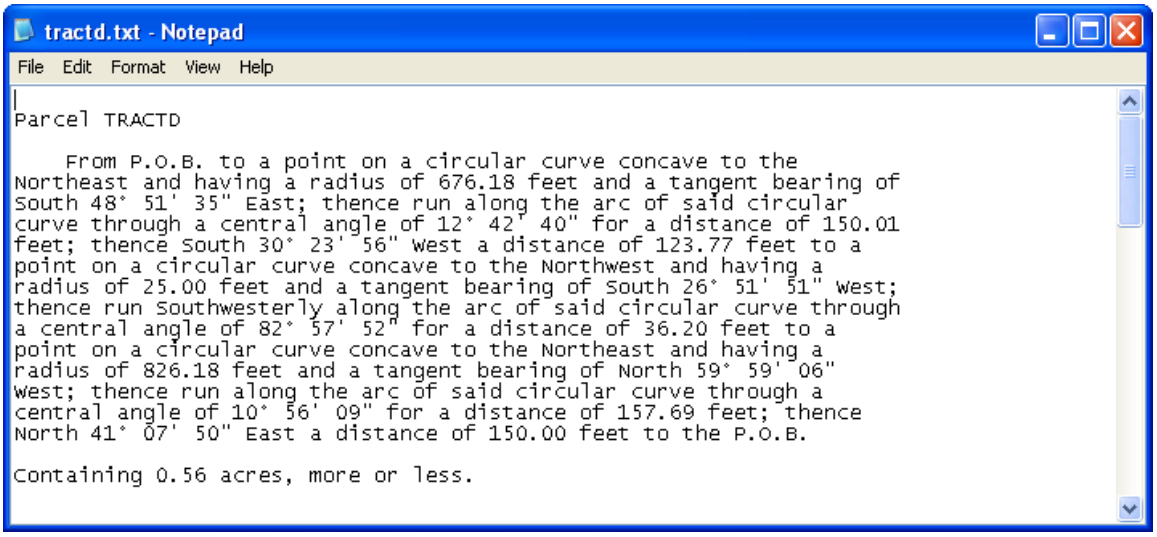


 © 2015 FDOT

5. In the COGO dialog, key-in the command "**MAKE LEGAL PARCEL TRACTD TRACTD.TXT**" and press the **Enter** key. A *text file* called **TRACTD.TXT** will be created in the same folder as the *rw1234567.dgn* file.



6. Use Windows Explorer to browse to and review the **TRACTD.TXT** file a portion of which is shown below.

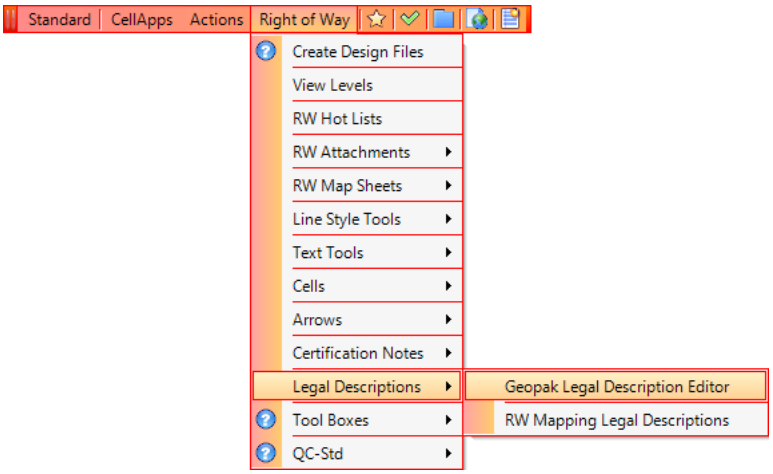


 © 2015 FDOT

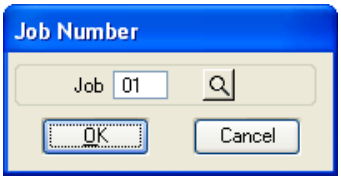
Exercise 4.2 Legal Description Editor (Optional)

➢ *Setup of Legal Description Editor*

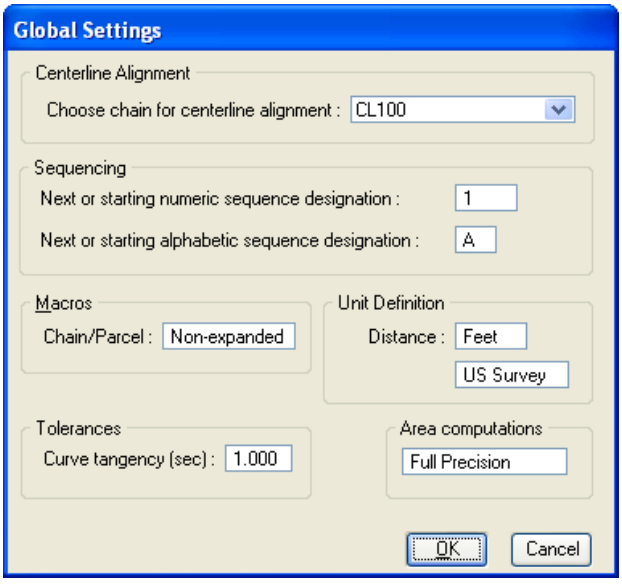
1. Open the MicroStation file C:\E\Projects\23456789012\rwmap*rwdetl03.dgn* and go to the *Saved View* **Parcel 4**.
2. From the Right of Way menu, select the Geopak Legal Description Editor tool as shown.



3. The Job Number dialog displays. Click on the *Magnifying Glass* and navigate to **Job 01**. Click **OK** to confirm the choice of the GEOPAK database.

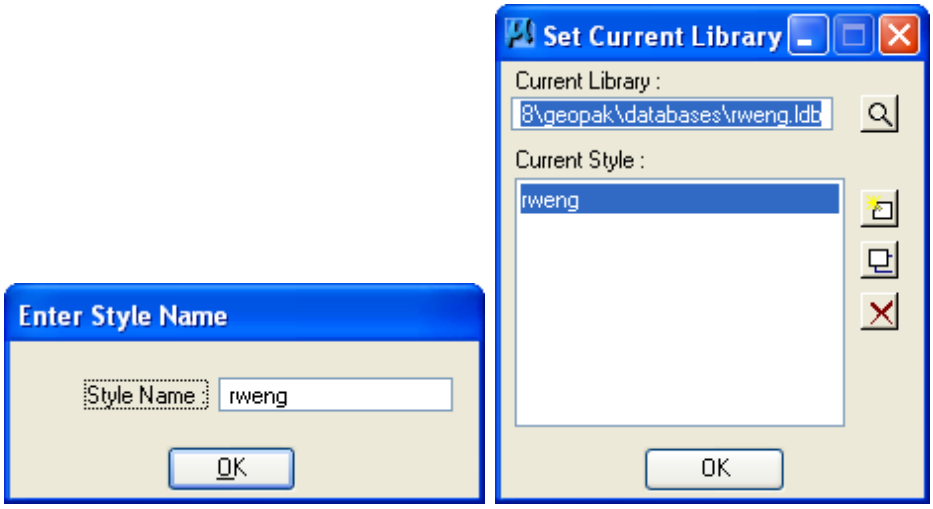


4. From the Legal Description Editor, select **Settings >Define Global Settings**.
5. Make sure that the Global Settings dialog matches the dialog shown below.

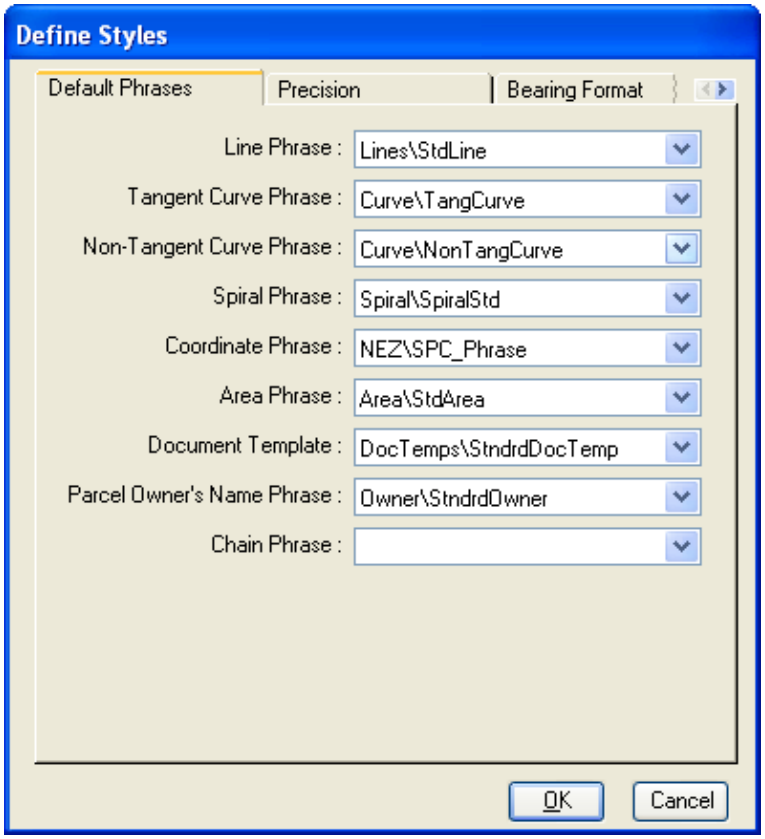


 © 2015 FDOT

6. Click **OK** to confirm the *Global Settings*.
7. From the Legal Description Editor menu, select **Library** > **Set Current Library/Style**.
8. Confirm that the *Legal Description Library* is set to C:\FDOT2010\geopak\databases*rweng.ldb* as shown.

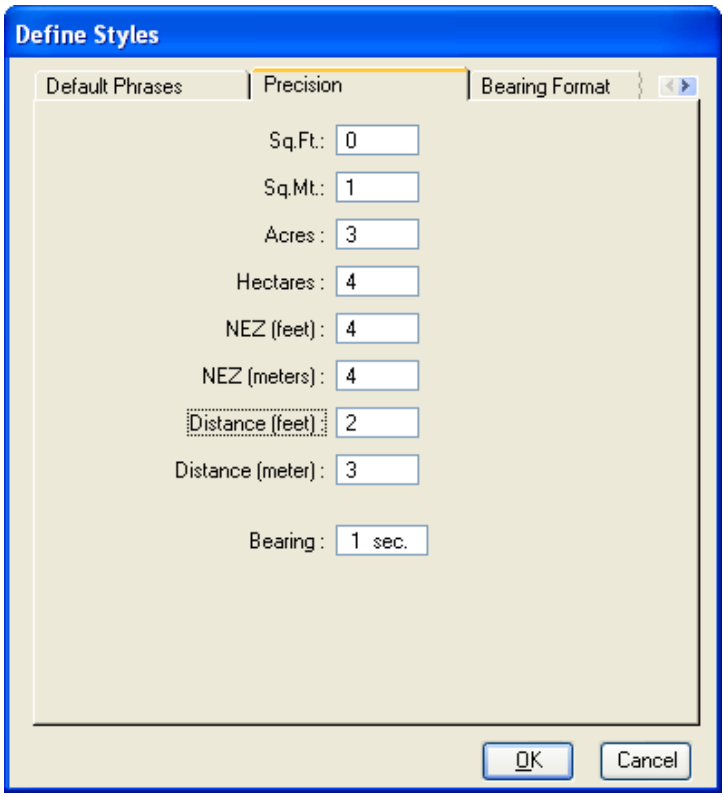


9. From the Set Current Library dialog, click the **Edit** icon to access the Define Styles dialog.
10. Match the Default Styles settings as shown below. This will ensure the correct phrases are used when writing the description.

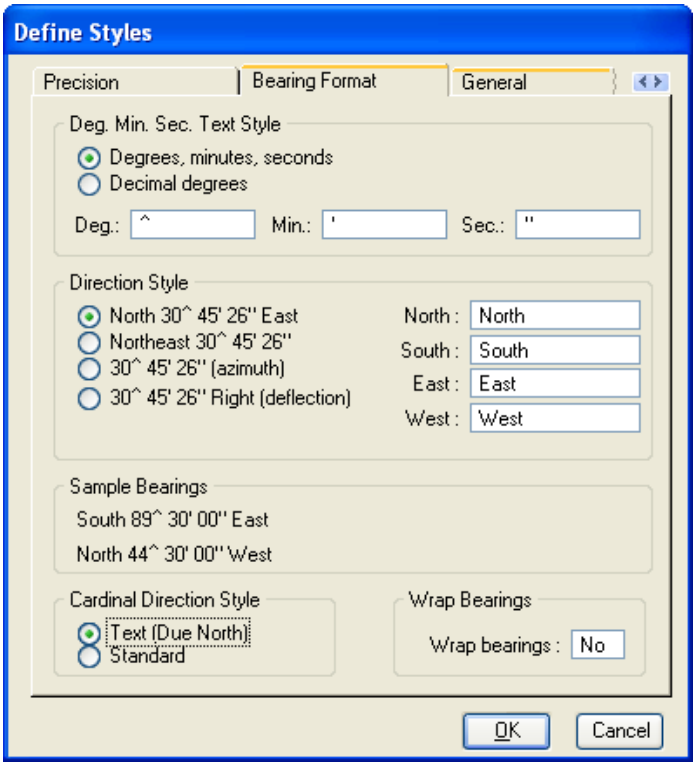


 © 2015 FDOT

11. Select the **Precision** tab and enter the settings as shown.

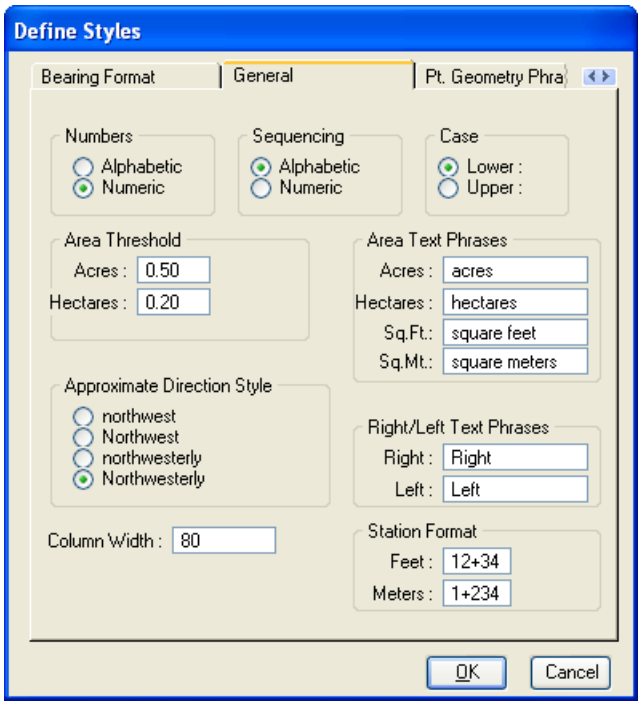


12. Select the **Bearing Format** tab and enter the settings as shown. Notice how this dialog displays a sample of the desired bearing preferences as they are set.

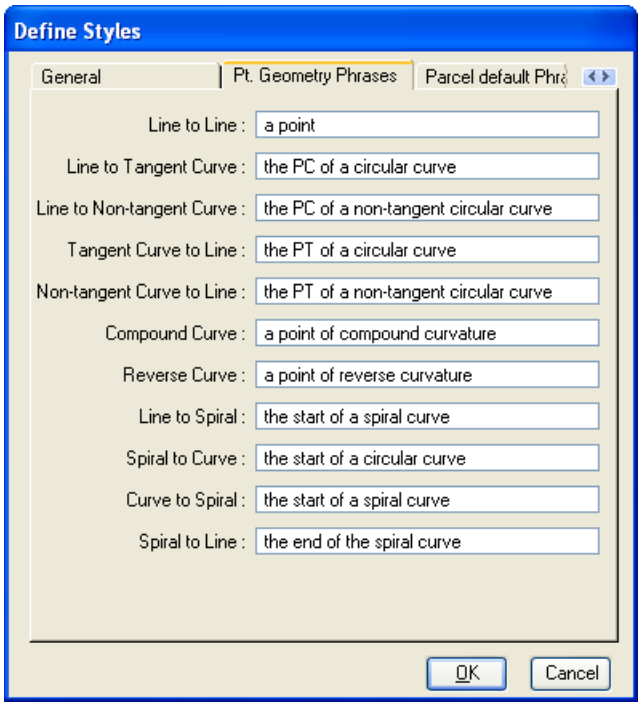


 © 2015 FDOT

13. Select the **General** Settings tab and enter the settings as shown. This tab provides general settings for areas and directions. Probably the most important setting here is the **column width**, as this controls the line wrapping and how the description is formatted.

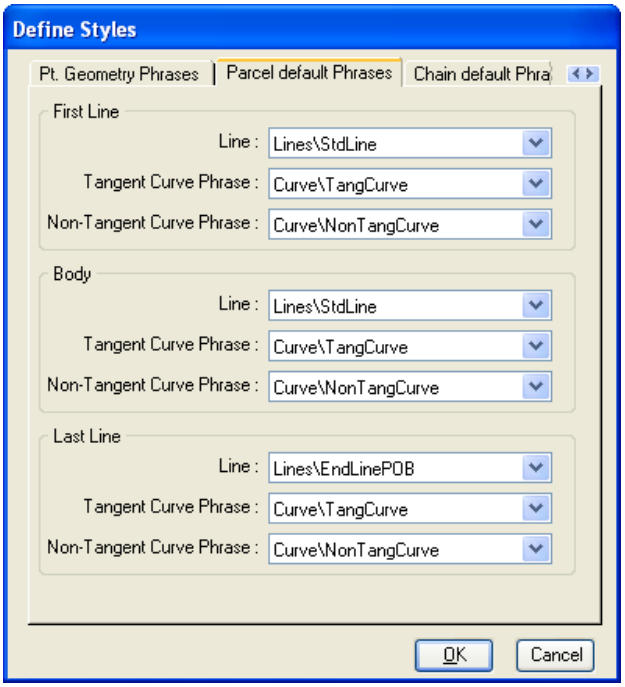


14. Select the **Pt. Geometry Phrase** tab. The Point Geometry Phrases tab allows the user to set default phrases for when the description encounters particular elements such as a PC or a reverse curve etc. These phrases are inserted into the description using the *<PTGEOM>* variable. The *<PTGEOM>* variable may be included as part of a line phrase.

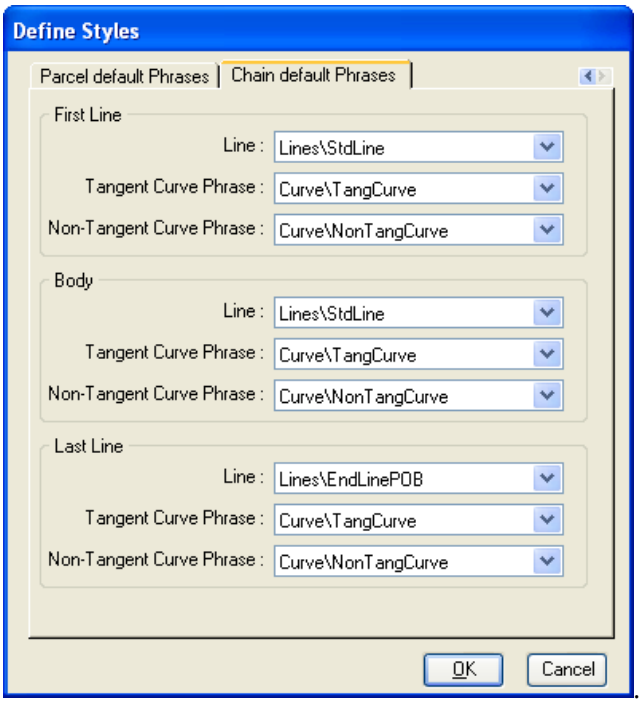


 © 2015 FDOT

15. Select the **Parcel default Phrases** tab and enter the settings as shown. The Parcel default Phrase option is very similar to the Point Geometry Phrases in that the user can establish defaults for parcel descriptions from beginning to end. These phrases determine what line style will be used for the first line of a parcel, the body of a parcel, and the last line of the parcel.



16. Select the **Chain Default Phrases** tab and enter the settings as shown.



17. Click **OK** to close the Define Styles dialog.
18. Click **OK** to close the Set Current Library dialog.

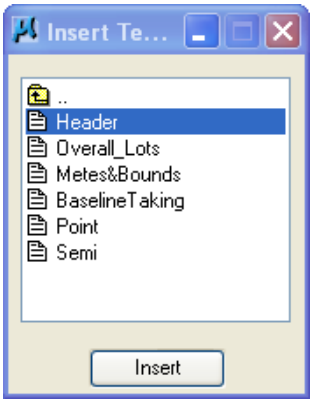
 © 2015 FDOT

Exercise 4.3 Writing a Legal Description (Optional)

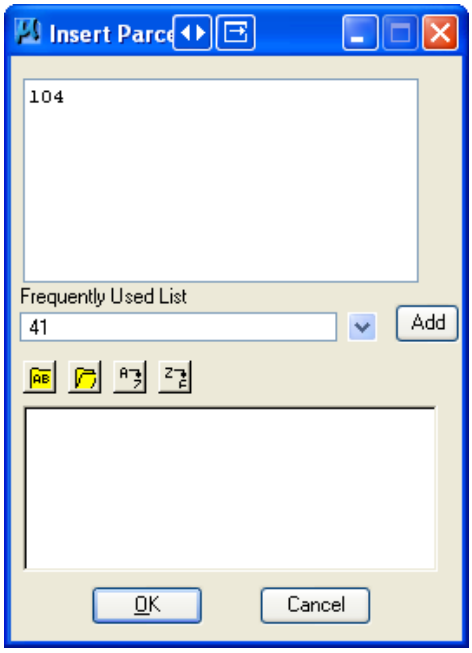
➢ *Begin a Legal Description*

1. From the Legal Description Editor dialog, begin by entering several *carriage returns* to create several blank lines above and below the active cursor. Once 5 blank lines have been created, move the cursor to the **third** line.

2. Select **Insert** > **Text Phrases** and select the **Header** item from the **Text** category as shown. Click **Insert** to start inserting the **Header** item into the Legal Description.



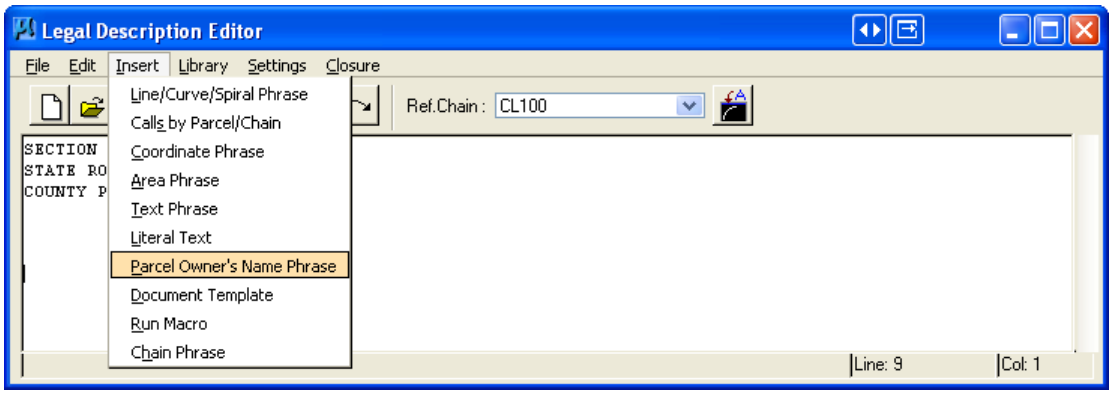
3. Answer all the prompts.



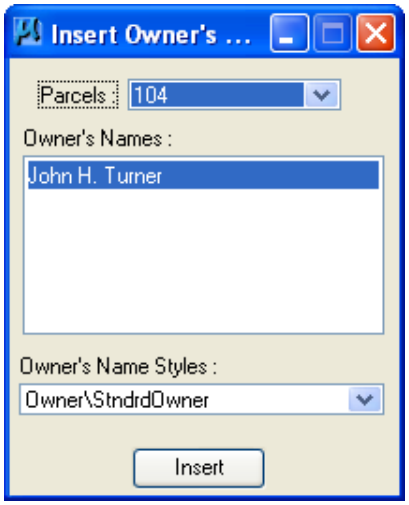
4. After answering all of the prompts, the Legal Description Editor dialog should display.

 © 2015 FDOT

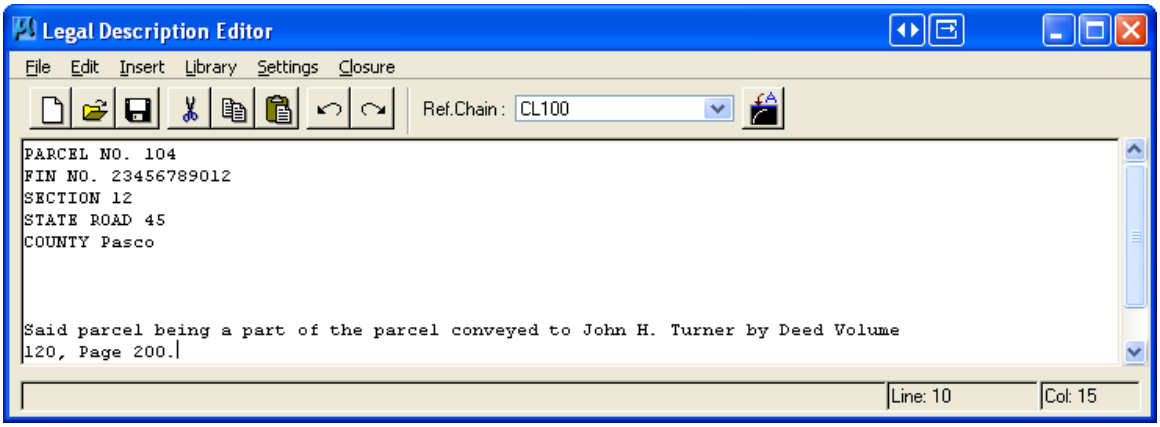
5. From the Legal Description Editor menu, select **Insert** > **Parcel Owner's Name Phrase** as shown.



6. The Insert Owner's Name dialog displays as shown. If necessary, select *Parcel* **104** from the pull-down and then left-click the *Owner's Name*. Click **Insert** to insert the *Owner's Name* into the Legal Description.

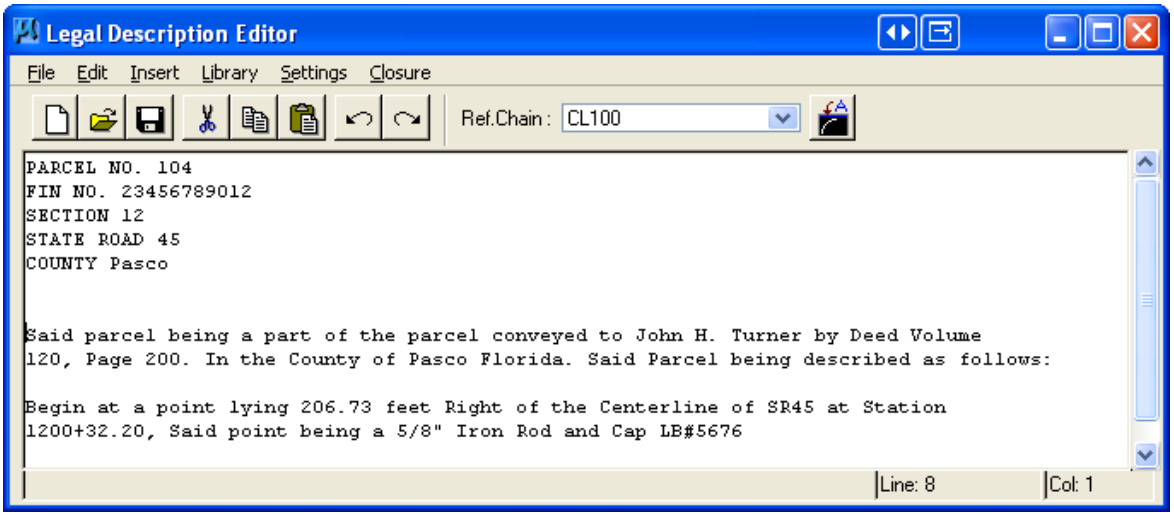


7. After the remaining prompts have been filled out and the Insert Owner's Name dialog has been closed, the Legal Description should display as shown. Press the **ENTER** twice to move the cursor to a new line and to create a blank line.

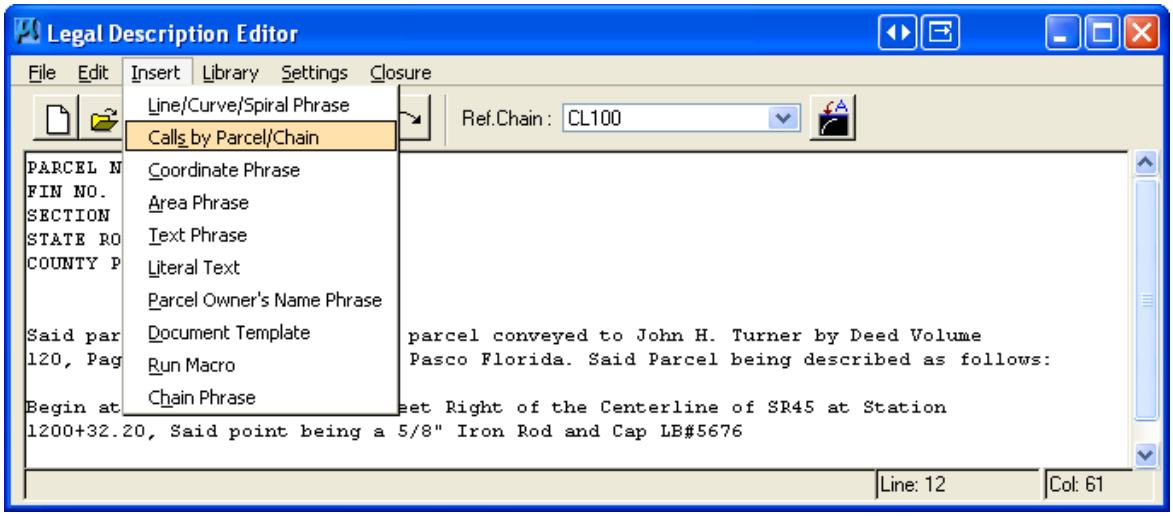


 © 2015 FDOT

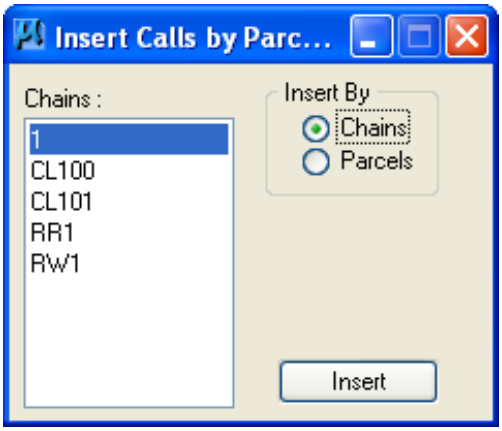
8. In the Legal Description Editor, type the additional text as shown. The Legal Description will display as shown.



9. From the Legal Description Editor menu, select **Insert** > **Calls by Parcel/Chain** as shown.

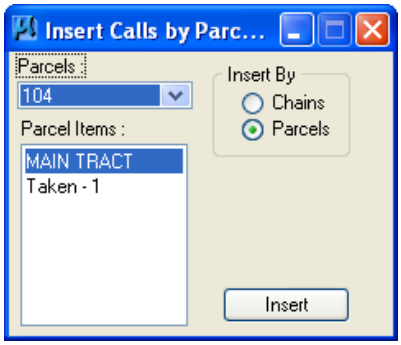


10. The Insert Calls by Parcel or Chain dialog displays.

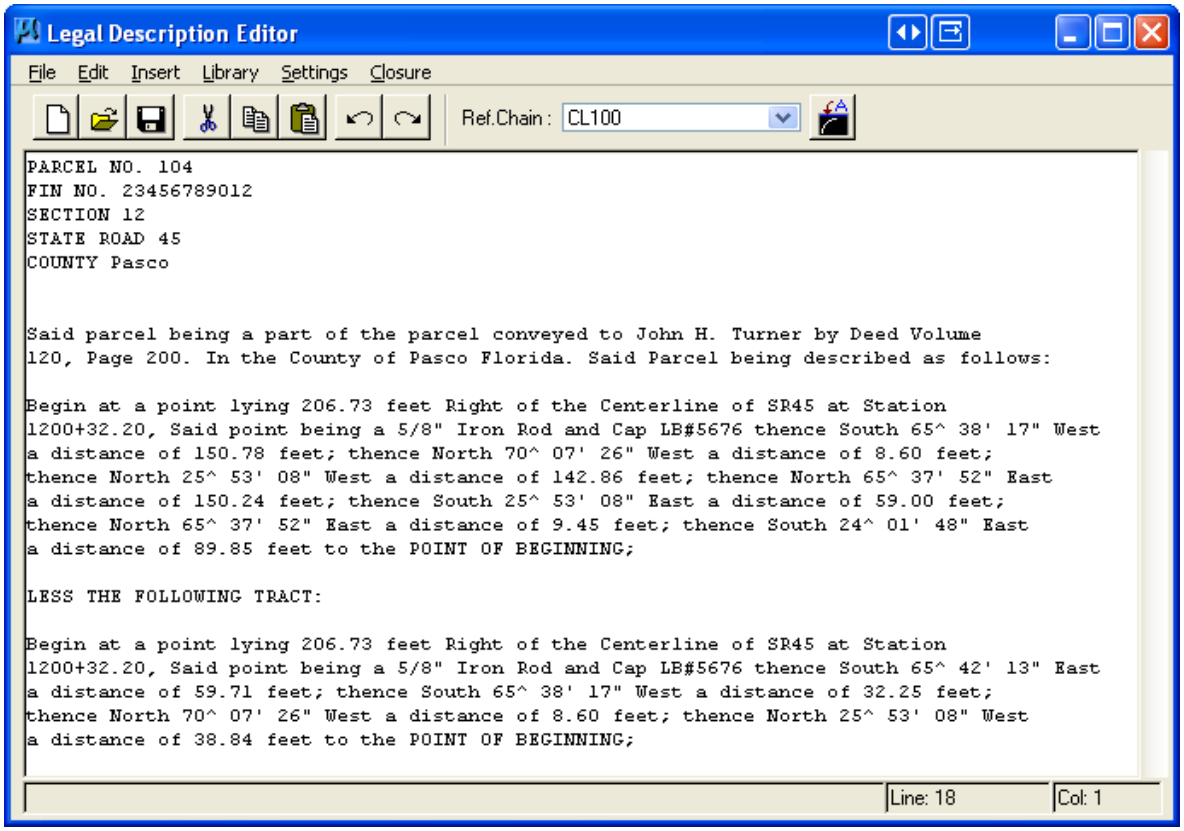


 © 2015 FDOT

11. Change the *Insert By* toggle to **Parcels** and select *Parcel* **104**. Click **Insert** to insert the description of the elements that make up Parcel 104 into the Legal Description Editor.



12. The completed Legal Description with the LESS OUT for the take is shown. Use the Legal Description Editor tools to complete the Legal Description to match the one shown below.



 © 2015 FDOT

© 2015 FDOT

5 DESIGN AND COMPUTATION MANAGER

OBJECTIVES

In this chapter, the FDOT Right-of-Way Mapper will learn more about:

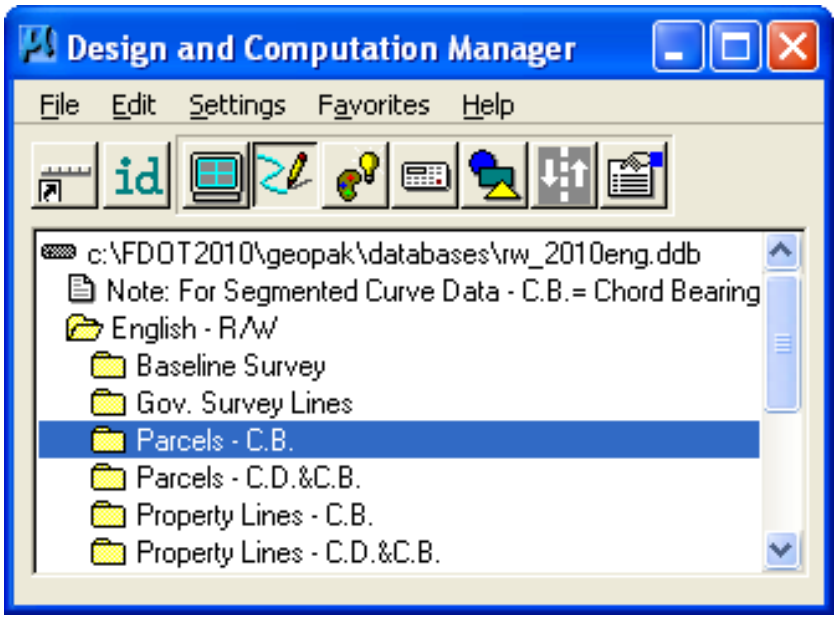
- How to use Design and Computation Manager (D&C Manager) to plot horizontal alignments into MicroStation.
- Understand the format of the hierarchical database and how to use it.
- Be able to use the D&C Manager in conjunction with other GEOPAK tools & MicroStation to draw and manipulate elements.

INTRODUCTION

The D&C Manager is a tool that allows users to standardize graphics elements for drafting and pay item quantities.

A hierarchical database is used with the D & C Manager. This database stores information concerning functional classification and display preferences for each feature and item used in a MicroStation file. This file is commonly referred to as the ddb file (*.ddb).

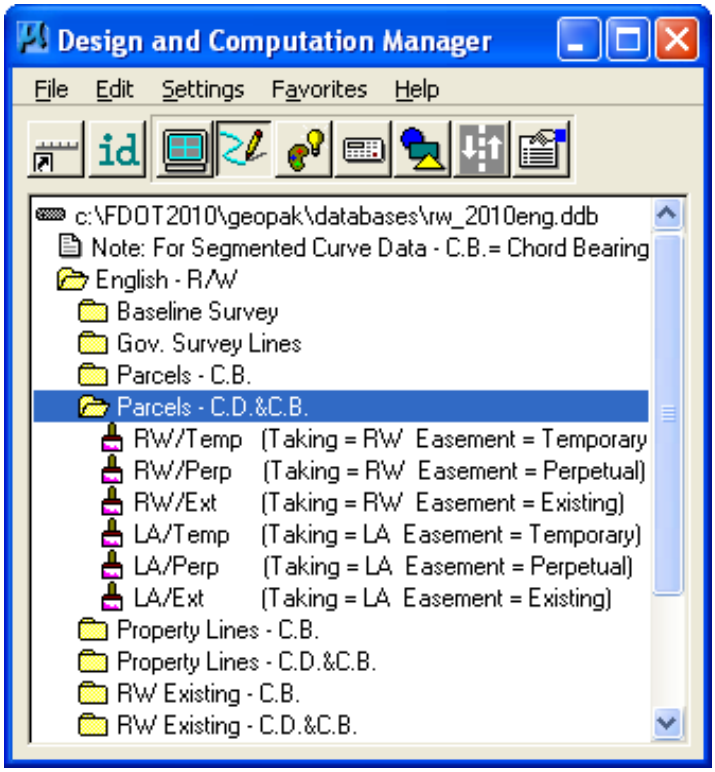
Categories are used to group and classify the features and items used in creating construction drawings. Two common examples of FDOT Right-of-Way categories are Baseline Survey and Gov. Survey Lines, as shown in the following diagram.



© 2015 FDOT

Each category can contain sub-categories. The sub-categories break down each classification into more specific items. Once below the **English – R/W** main category, there are no subcategories in the **rw_v2010eng.ddb** file.

Within a category (represented by the folder icon), the items that are included are designated according to the process that they will be used for (as a drafting item indicated by a paintbrush shown in the following diagram).



Each entry represents a specific item. The various icons representing the function they will be utilized for can identify items.

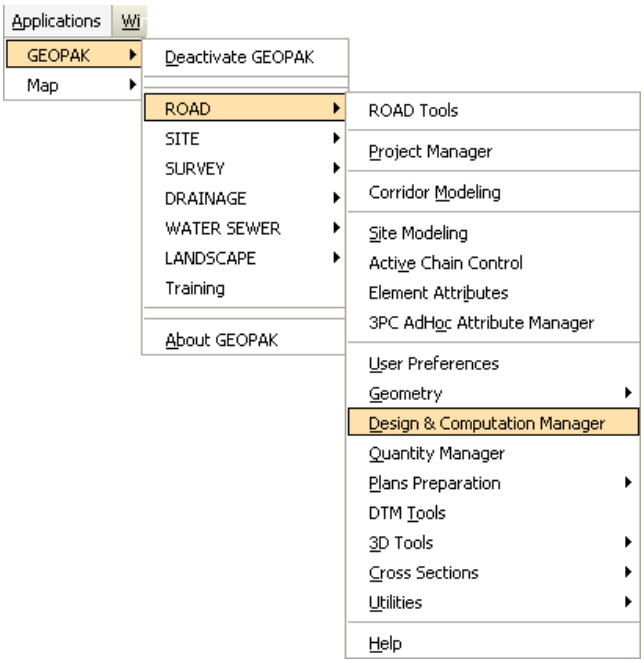
- Calculator (quantities calculations)
- Paintbrush (draw design elements)
- Report icon (default, pavement design, pavement markings, etc.)

The database may also be password protected. This can be used as a security measure to protect the integrity of the database file and ensure its consistent application on a statewide or company wide basis.

 © 2015 FDOT

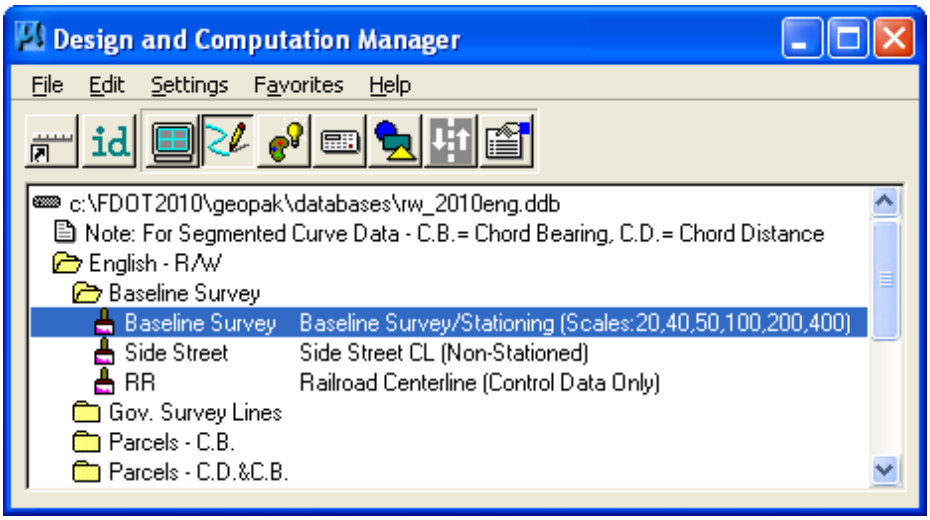
ACCESSING THE D & C MANAGER

D & C Manager can be accessed by selecting the MicroStation menu option: **Applications > GEOPAK ROAD > Design & Computation Manager**.



It can also be invoked by clicking the **Design & Computation Manager** icon from the **GEOPAK ROAD Tools** tool frame and the **Plan View Design** toolbox in Project Manager.

When the D & C Manager is accessed, two dialogs are displayed.

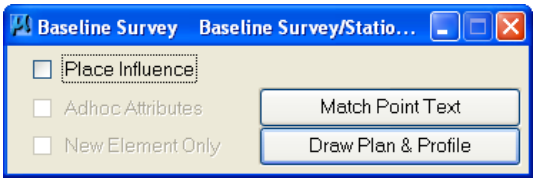


 © 2015 FDOT

The main D&C Manager dialog is composed of two distinct areas:

- Across the top are icons for the various modes. The D&C Manager may be configured to operate in seven different modes: Display, Design, Set, Compute, Shape, Pavement Marking and Preferences. As various modes are selected, more icons are displayed within this area.
- The Path box displays the name of the attached database file and your current position within the database structure. It lists the categories, sub-categories and items available for selection. This hierarchical data structure functions much like a directory. Double clicking enables the user to move up or down within the database.

A second dialog displays differently depending on the mode of operation. This dialog enables the user to set other options not available on the main dialog.



- File Commands

For the FDOT RW Mapper, the only file command options needed are **Open** and **Exit**. Other commands such as **Save**, **Merge,** and **Compress** are used by personnel who maintain the database.

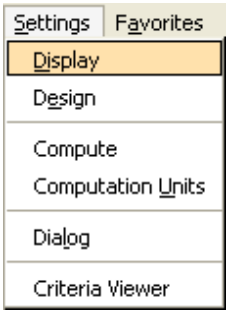
As mentioned previously, the **Password** option may be used to password protect the database so a user would not be able to make changes to it.

- Edit Commands

As a RW Mapper, the most-used Edit commands will be Find, Identify and Review Item.

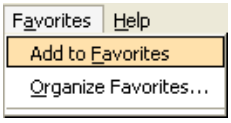
- **Find –** This tool will search the database (from your current location) for an item or category. If the database is password protected, all other items will be disabled.
- **Identify** – This tool will allow the user to select an element in the design file to identify which item it matches in the database.
- **Review Item** – This tool will allow you to review the settings/symbology for a particular item in the database

- Settings



  - **Display Settings -** temporarily changes the display of elements on the screen to one common color, then you may specify additional elements to be viewed in their original colors. This tool enhances visualization when working on a complex project.
  - **Design Settings** - sets the *maximum gap* tolerance and *deduction tolerance* used in computations and the drawing scale for placing cells.

- Favorites

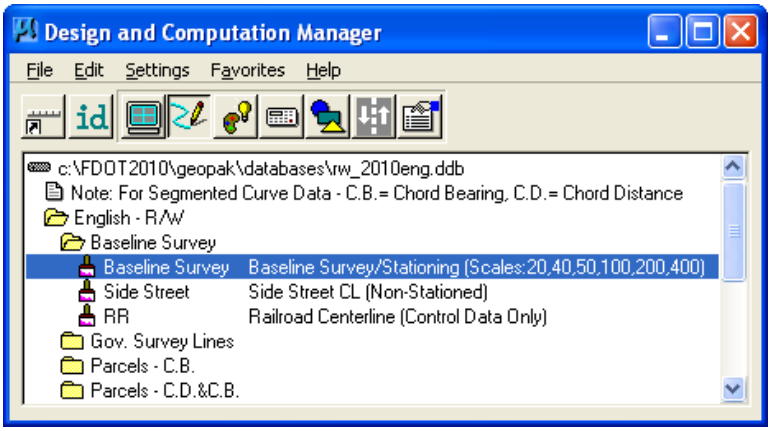


  - **Add to Favorites** - saves current D&C Manager path for easy recall in the future.
  - **Organize Favorites** – allows the organization of previously saved paths

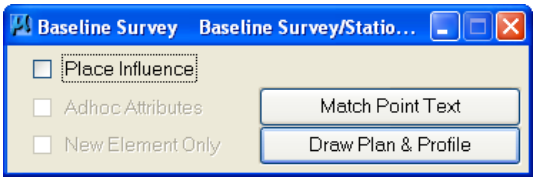
OPERATIONAL MODE - DESIGN

The Design mode enables the user to draw each right-of-way element or COGO element (and associated attributes) in the design file based on drafting item parameters.

First, the desired item is highlighted in the main dialog list box, i.e., baseline survey, side street, etc.



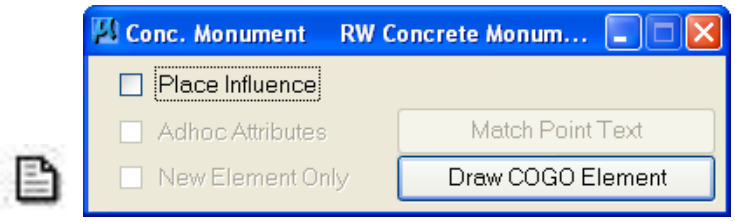
The Place Influence option sets the level, symbology and attribute tags of elements drawn or copied, using MicroStation commands. When the Place Influence toggle is activated, elements are drawn using the ByLevel symbology and attributes. When Place Influence is off, elements are drawn using the active ByLevel symbology.



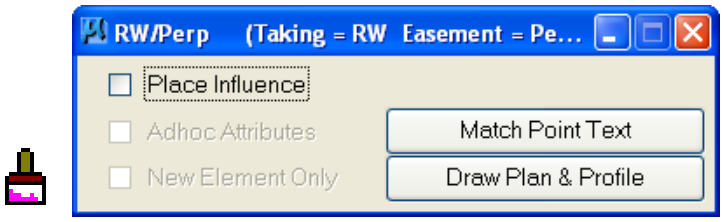
Note When using the **rw_v2010eng.ddb** file, FDOT RW Mappers should have **Place Influence** unchecked.

The **Draw COGO Element** button is for drawing COGO elements to a design file. A single click to this button prompts your for a job number then opens a dialog that enables you to select a COGO item to draw.

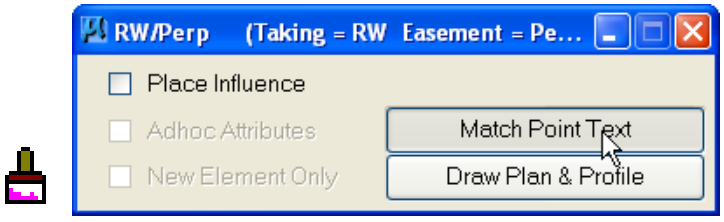
 © 2015 FDOT



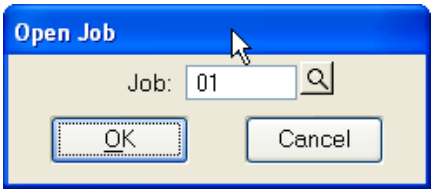
If an alignment, profile or parcel item is chosen, the Draw COGO Element button changes to **Draw Plan and Profile**.



If **Match Point Text** is selected the active MicroStation settings are set to match the drafting preferences symbology for points of the selected item.



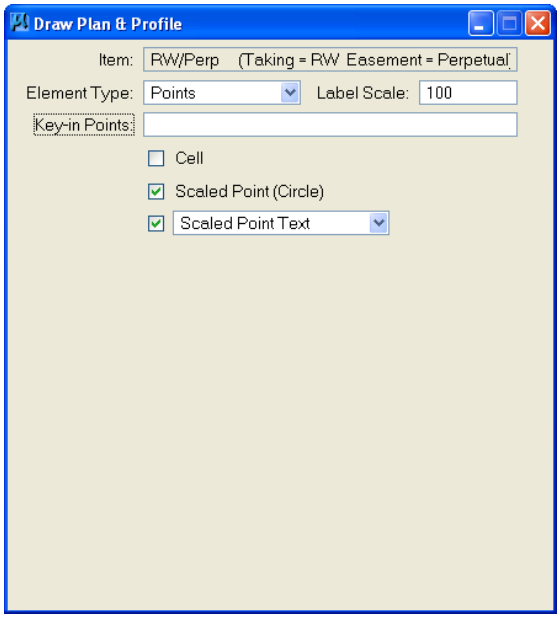
From the secondary dialog that is opened, click the Draw Plan & Profile button to initiate the drawing of COGO elements into the design file. Clicking this button prompts the user for a job number as shown below (the coordinate geometry database file wherein the COGO elements are stored), and then opens a dialog that enables the user to select a COGO item to draw. Do Not activate the Place Influence toggle when using Draw Plan & Profile.



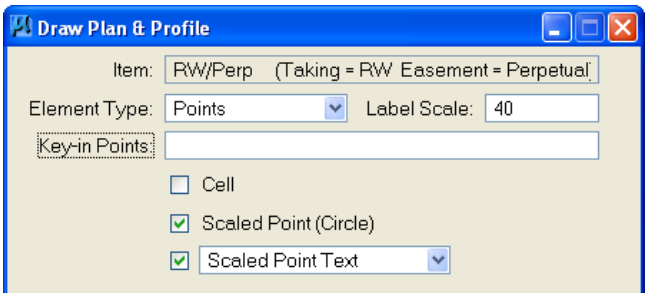
Hint If utilizing the Design & Computation Manager within Project Manager, the user is not prompted for a job number since this is associated with the active project.

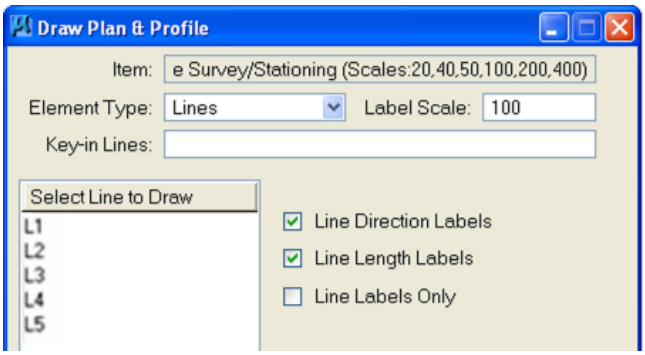
 © 2015 FDOT

Eight operations may be accessed from the Plan and Profile Draw dialog: Points, Lines, Curves, Spirals, Chains, Stationing, Parcels, and Profiles. Each of these operations dynamically changes the dialog to reflect the selection with the various draw and label features used when placing a COGO element in a graphics file.



The **points** and **lines** dialoges have a key-in field that allows you to specify the names of the COGO elements to be drawn. To use the line operation, you must use point numbers to specify the ends of the line. The points/lines are drawn immediately after you enter their respective names and press the enter key. To draw more than one point or line, place a dash in-between the point numbers. To draw a line without using consecutive point numbers, use a forward slash (i.e. 10/12).





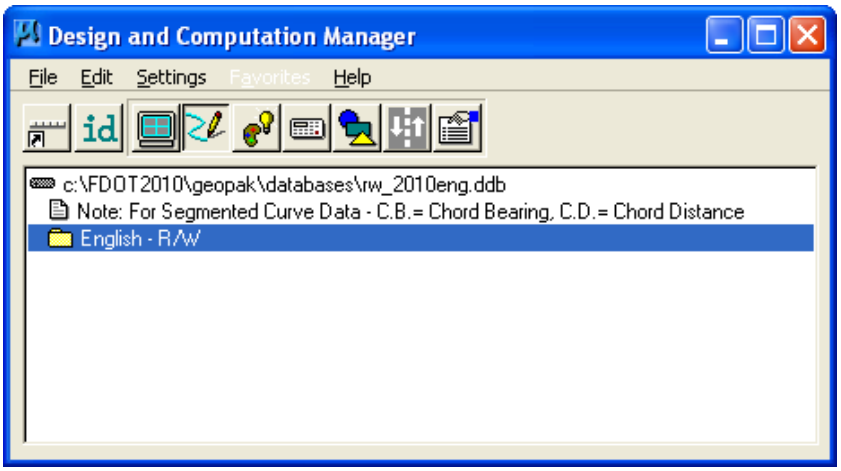
Hint	GEOPAK can draw elements to non-active levels. After elements are drawn, it may be necessary to turn on appropriate levels and fit the elements into the view.

 © 2015 FDOT

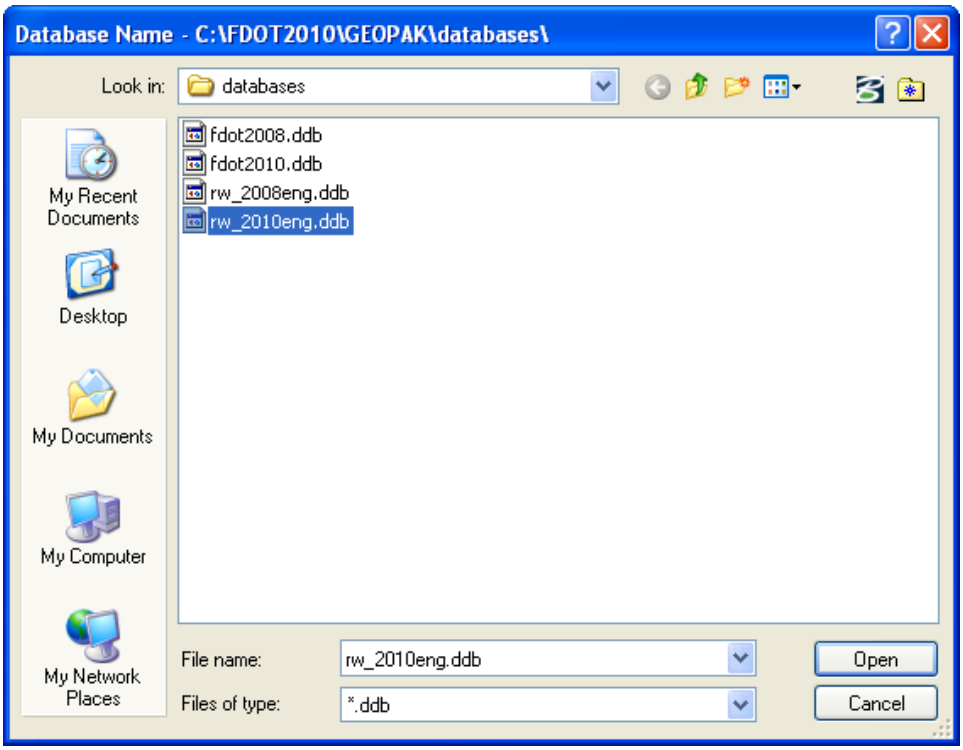
Exercise 5.1 Design & Computation Manager – Survey Baseline

1. Open the MicroStation file C:\E\Projects\12345678901\rwmap*RW1234567.dgn*. Open the *Model* **Chapter 5** and fit the view if necessary.

2. From the MicroStation menu, select **Applications > ROAD > Design & Computation Manager** or select **Applications > MicroStation Civil Extensions > Design & Computation Manager**. After about 30 seconds, the *Design Database (DDB)* file will be loaded and the *Design & Computation Manager* will display as shown.

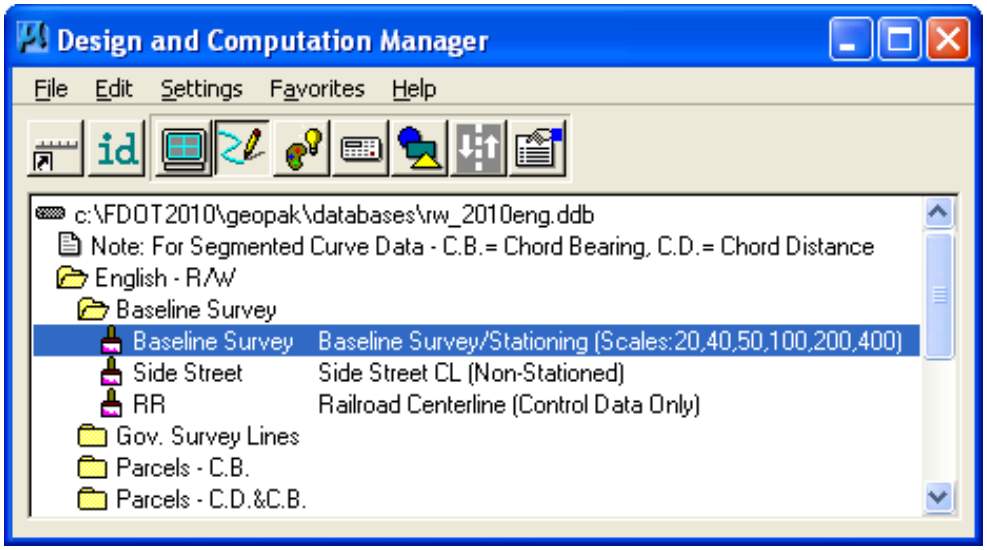


3. If the D&C Manager does not open automatically connected to the **rw_2010eng.ddb** file, use the D&C Manager menu option: **File > Open** to browse to the location of the **rw_2010eng.ddb** file as shown. Select the **rw_2010eng.ddb** file and click **OK** to connect the D&C Manager to the Right-of-Way database.

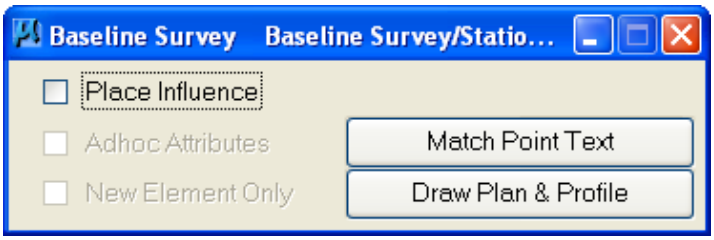


 © 2015 FDOT

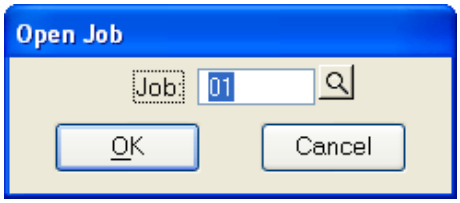
4. From the D&C Manager, select the **Baseline Survey** item as shown.



5. This will open the dialog shown below. Be sure to uncheck **Place Influence** to ensure that the correct MicroStation Level symbology is applied to the Baseline of Survey.

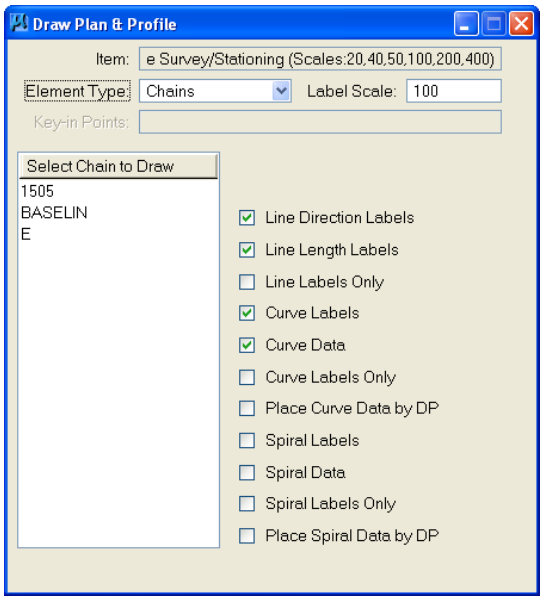


6. Click the **Draw Plan & Profile** button. This will prompt the user for the correct GEOPAK Job Number. Select *Job* **01** as shown and click **OK**.

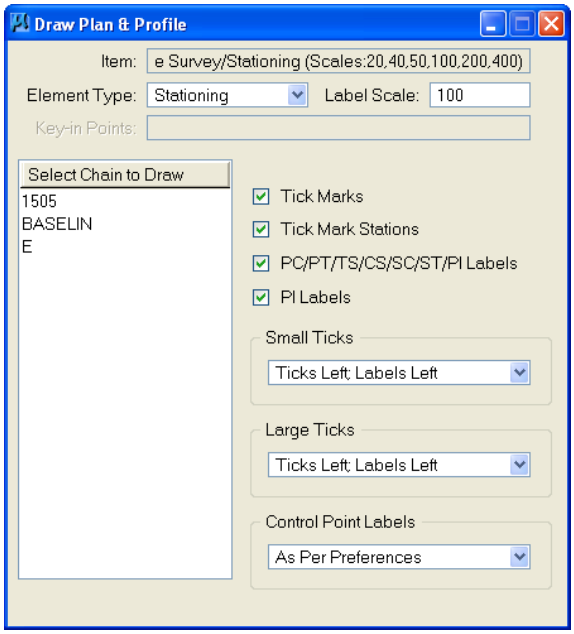


 © 2015 FDOT

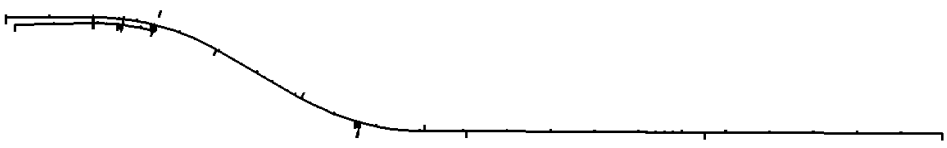
7. In the Draw Plan & Profile dialog, change the *Element Type* to **Chains**. From the *Select Chain to Draw* listing, select the chains **1505** and **BASELIN** only once to draw the *chains* into the MicroStation DGN file.



8. In the Draw Plan & Profile dialog, change the *Element Type* to **Stationing**. From the *Select Chain to Draw* listing, select the chains **1505** and **BASELIN** only once to draw the *station elements* for the chains into the MicroStation DGN file.



9. Fit the MicroStation View. The DGN file should now look similar to the one shown below.

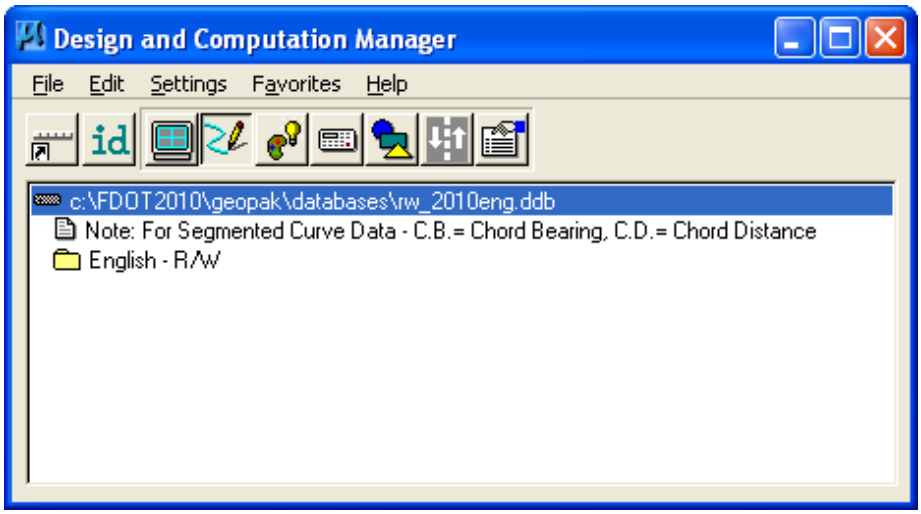


 © 2015 FDOT

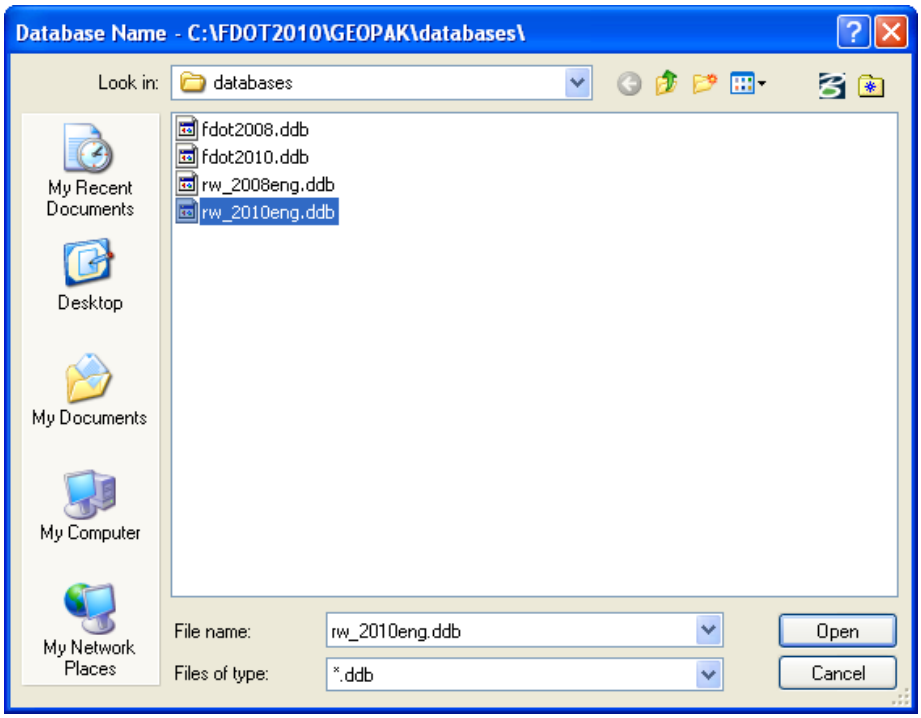
Exercise 5.2 Design & Computation Manager – TRACT D

1. Open the MicroStation file C:\E\Projects\12345678901\rwmpa*RW1234567.dgn*. Go to the **Default** *Model* and open the *Saved View* **TRACT D**.

2. From the MicroStation menu, select **Applications > ROAD > Design & Computation Manager** or select **Applications > MicroStation Civil Extensions > Design & Computation Manager**. After about 30 seconds, the Design Database (DDB) file will be loaded and the **D&C Manager** will open as shown.

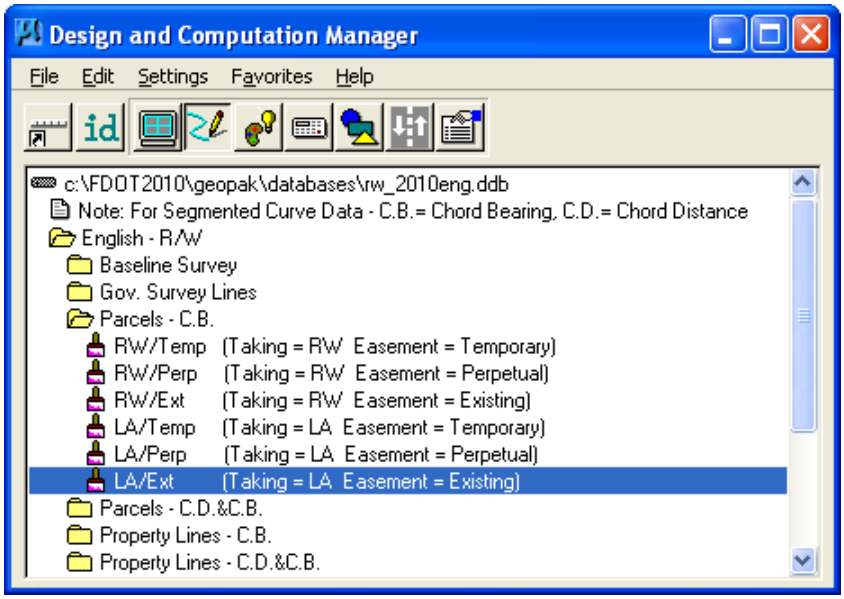


3. If the D&C Manager does not open automatically connected to the **rw_2010eng.ddb** file, use the D&C Manager menu option: **File > Open** to browse to the location of the **rw_2010eng.ddb** file as shown. Select the **rw_2010eng.ddb** file and click **OK** to connect the D&C Manager to the Right-of-Way database.

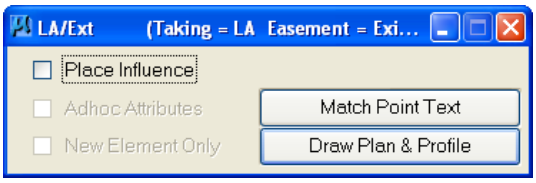


 © 2015 FDOT

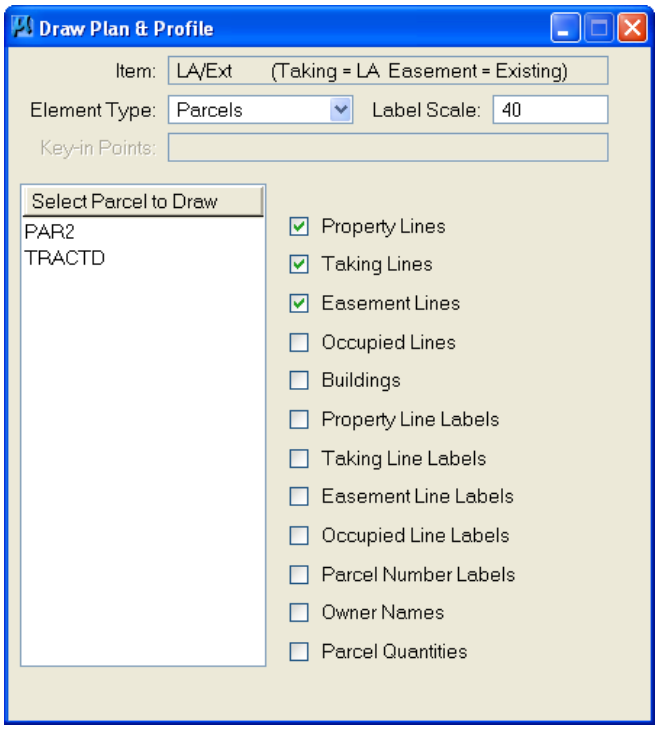
4. From the D&C Manager, select the **LA/Ext** item as shown.



5. The LA/Ext dialog will display as shown. Click the **Draw Plan & Profile** button.

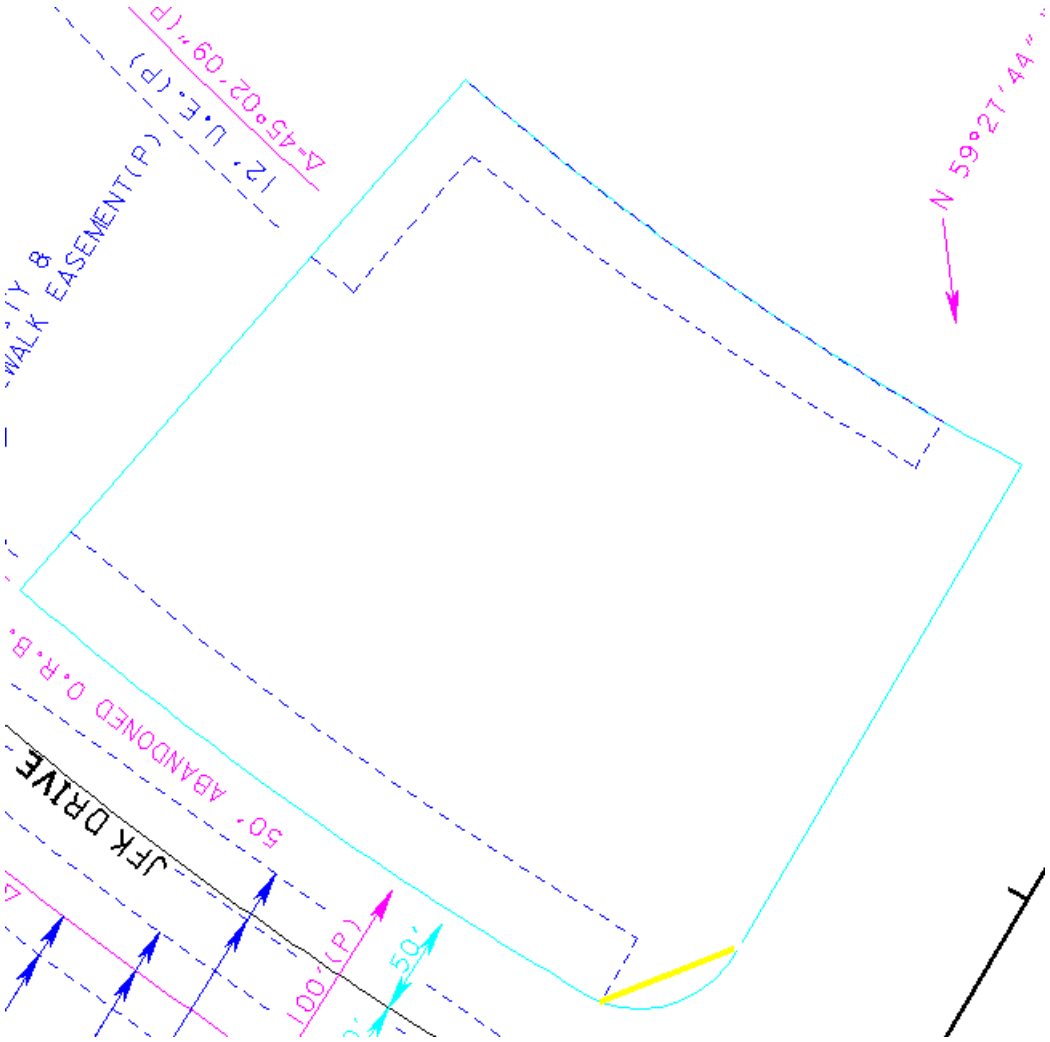


6. From the Draw Plan & Profile dialog, change the *Element Type* to **Parcel** as shown below.



 © 2015 FDOT

7. Make sure that **Property Lines, Taking Line**, and **Easement Lines** are checked and click once on the **TRACTD** parcel to draw the elements into the MicroStation DGN file. The DGN file should display as shown below.



8. In the **Default** Model, go to the Saved View **PAR2**. Click on **PAR2** in the **Draw Plan & Profile** dialog in order to draw the **PAR2** Parcel into the *RW1234567.dgn* file.

Note It can be seen that even though the D&C Manager draws the majority of the selected elements, there is still a need for manual drafting techniques such as **Delete Element**, **Place Text**, and other such tools.

 © 2015 FDOT

 © 2015 FDOT

6 CREATE RIGHT OF WAY ANNOTATION BY METHODS

OBJECTIVES

This chapter will review GEOPAK's Plan View Labeler using the FDOT Label Styles (.lsf) File. Items covered will include:

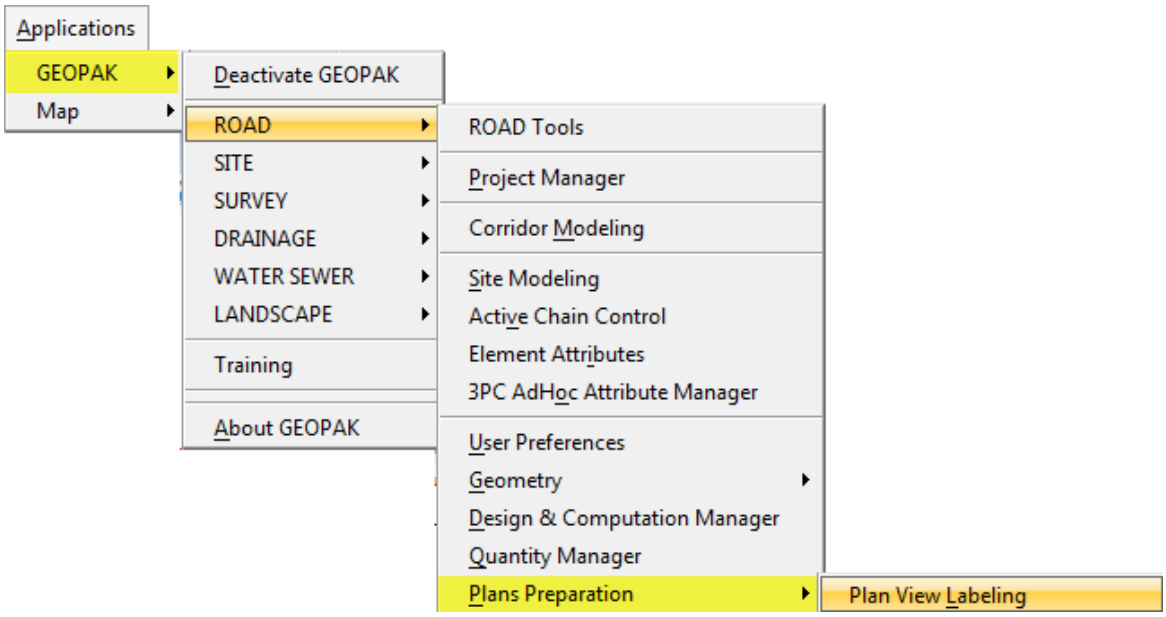
- Reviewing all the tabs located inside the Plan View Labeler
- Placing labels using the FDOT Label Style (.LSF) File

INTRODUCTION

GEOPAK's Plan View Labeler provides the user with numerous methods to create annotation for design file project data. This annotation can include user type data supplied by the user or computed data created from GEOPAK and MicroStation elements. GEOPAK's Plan View Labeler contains tools that allow a user to place "smart" labels in a MicroStation drawing. These labels have the ability to calculate and label various parameters of both MicroStation and GEOPAK elements into the design file. A partial list of element attributes includes: XYZ coordinates, station, offset, direction, length, radius, degree of curvature.

ACCESSING GEOPAK'S PLAN VIEW LABELER

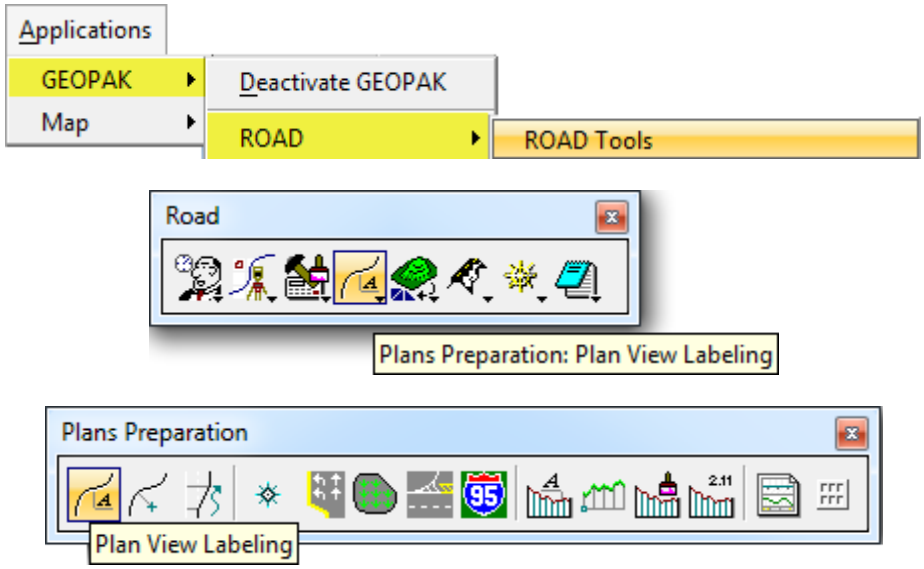
GEOPAK's Plan View Labeler can be accessed from the MicroStation menu by selecting **Application** > **Geopak** > **Road** > **Plans Preparations** > **Plan View Labeling** as shown below:



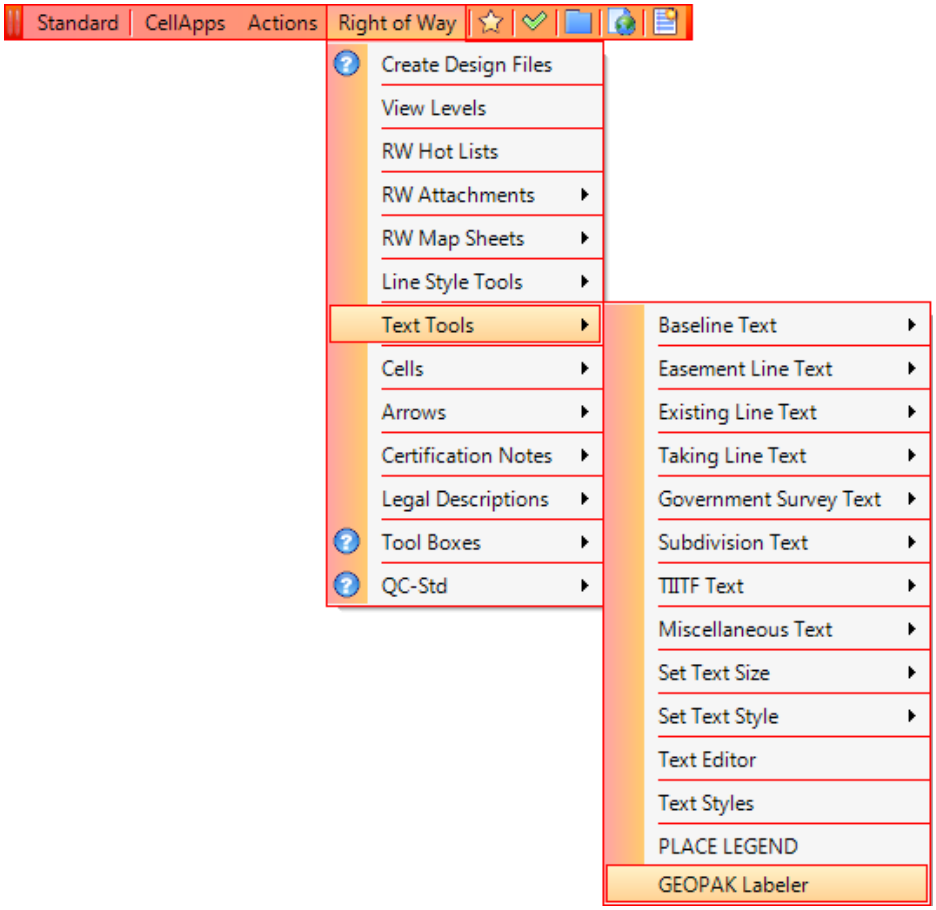
 © 2015 FDOT

<OR>

GEOPAK's Plan View Labeler can be accessed from the **Plans Preparation** toolbox from the MicroStation menu by selecting **Application > Geopak > Road > Road Tools** as shown below:



The Right-of-Way FDOT Menu offers a quick link to GEOPAK's Plan View Labeler by selecting **Text Tools > GEOPAK Labeler** as shown below:

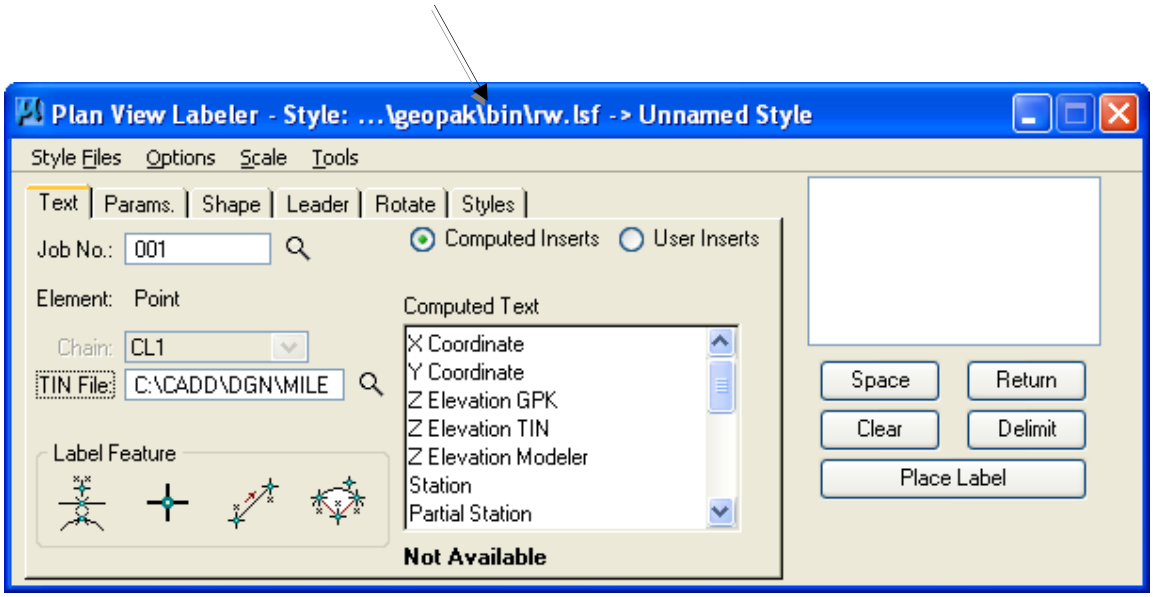


 © 2015 FDOT

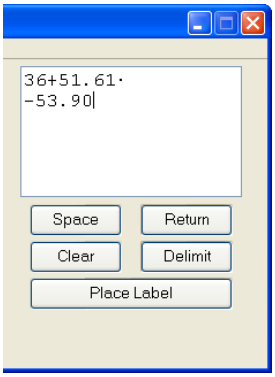
GEOPAK PLAN VIEW LABELER OVERVIEW

The Plan View Labeler automates the composition and placement of plan labels onto drawings Plan View Labeler allows the user to place "smart labels" on the drawing. These labels have the ability to calculate XYZ coordinates, station, offset, direction, length, radius, degree of curvature, etc. of the associated element.

One of the main uses for this labeling tool is the creation of labeling styles that can be saved for future use. A Right of Way Mapping style file has been created called **RW.LSF,** which contains useful annotation styles for placement of required mapping data. These styles are listed under the category **RW-Labels**. The user may add additional styles to this category for specific labeling used at their site. It is, however, recommended that the file be saved as a different name than the original in order to prevent the edited version from being written over during future updates of the CADD software. The currently attached style file can be determined by viewing the information banner at the top of the dialog.



The label to be placed is displayed in the box on the right side of the dialog.



- **Space** Places a space in your label at the position of the cursor.
- **Return** Places a return to start a new line of text in your label.
- **Clear** Clears out the contents of the label to start a new label.
- **Delimit** Places a line above or below a line of text.
- **Place Label** Attaches the label to the pointer for placement in the drawing.

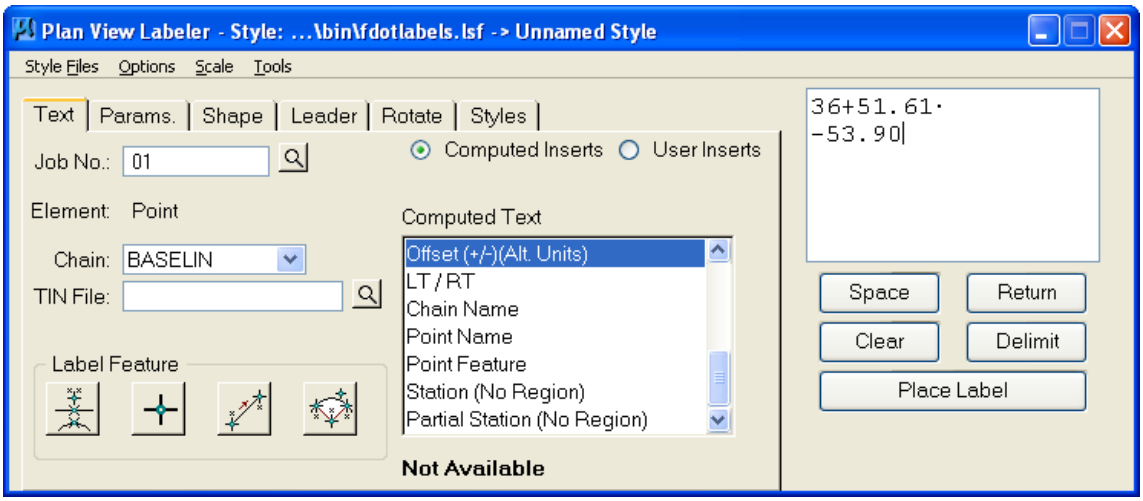
Plan View Labeler can be synchronized with Design & Computation Manager for level symbology, saving time and effort as the symbology standards are already set up in Design & Computation Manager. Plan View Labeler can read geometry from the COGO database (.gpk), or you can measure lines drawn in MicroStation and retrieve the bearing or angle.

Plan View Labeler is set up to work with label style files (.lsf) provided to you by FDOT. The user can also create custom styles by providing information on the text, parameters, shape, leader, and rotate tabs.

The label to be placed is displayed in the box on the right side of Plan View Labeler. The user can select the various tabs to define/modify the label display.

 © 2015 FDOT

TEXT TAB



The text tab is primarily used to calculate a location like a station/offset for a point or the geometry of a line or curve.

- **Job No** This is the project *.gpk* file. The *Select* button allows the user to browse and pick the *.gpk* from a list.

- **Chain** This is the alignment you wish to label off of, filled in by your working alignment definition.

- **TIN File** GEOPAK binary TIN file name utilized for Z Elevation in the computed text fills in the box. Click the *File* button to open a TIN file dialog and select the specified file.

- **Label Feature** Four options are available to select the type of label to be placed.

  Select GEOPAK or MS Element – Allows the user to select a MicroStation element or GEOPAK element and label based upon those parameters. The computed text inserts change to reflect labeling options appropriate for the selected element type.

  Data Point Location – This option allows the user to snap using a data point inside MicroStation and base a label off those parameters. The computed text inserts change to reflect labeling options appropriate for this label

  2 GPK Point Line – This option allows the user to select two visualized GPK points and create a label based upon a line.

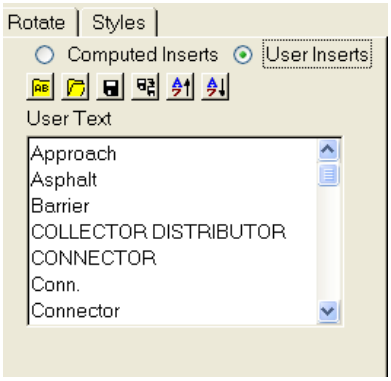
  3 GPK Point Arc – This option allows the user to select two visualized GEOPAK points representing the PC and PT respectively. GEOPAK then prompts for a center point, another visualized GEOPAK point or a point on the curve. A display curve is drawn and the user is prompted for the Chord Direction Point, which is identified dynamically.

 © 2015 FDOT

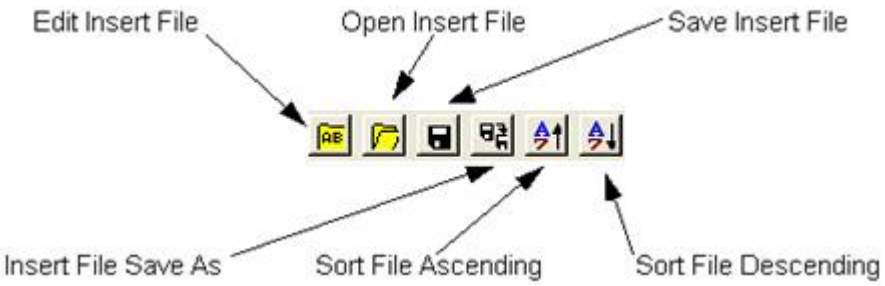
The power of the Plan View Labeler is its use of computed text inserts. Based on the element type being labeled (i.e., point or line), there are numerous computed values, which can be included in a label. Once these inserts are added to a label, their values are automatically recomputed for subsequent elements identified.

- **Computed Inserts** This option gives the user a list of values that can be computed by the Plan View Labeler based upon the label feature chosen. Once the label feature is chosen, then the computed inserts change to reflect the feature. The user controls the number of decimal places by selecting the number in the list at the bottom right corner of Computed Text.

- **User Inserts** This option is used to help populate the labels with frequently used words or phrases. An ASCII file is created containing the commonly used words that the user can pick from in lieu of typing. FDOT provides a number of customized ASCII text files to use with GEOPAK - Plan View Labeler. They are located in the **C:**\FDOT2008\geopak\bin folder.

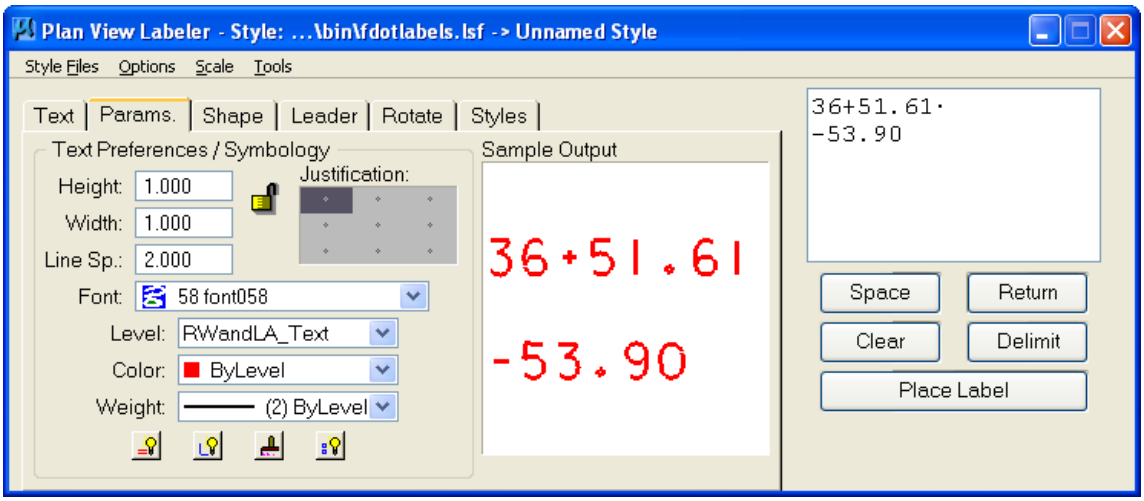


When *User Inserts* is selected, the buttons for file manipulation are displayed.



 © 2015 FDOT

PARAMS. TAB



The **Parameters** tab enables the user to set up the text size and symbology for the label.

Height	Text height
Width	Text width
Line Sp.	Line spacing
Font	Font Type

Note The text parameters should be entered at 1:1. This way the custom label can be used easily with any scale. The level symbology can be manually entered or one of the four buttons at the bottom can be used.

Set By Current Populates the boxes with information from the active level symbology in MicroStation.

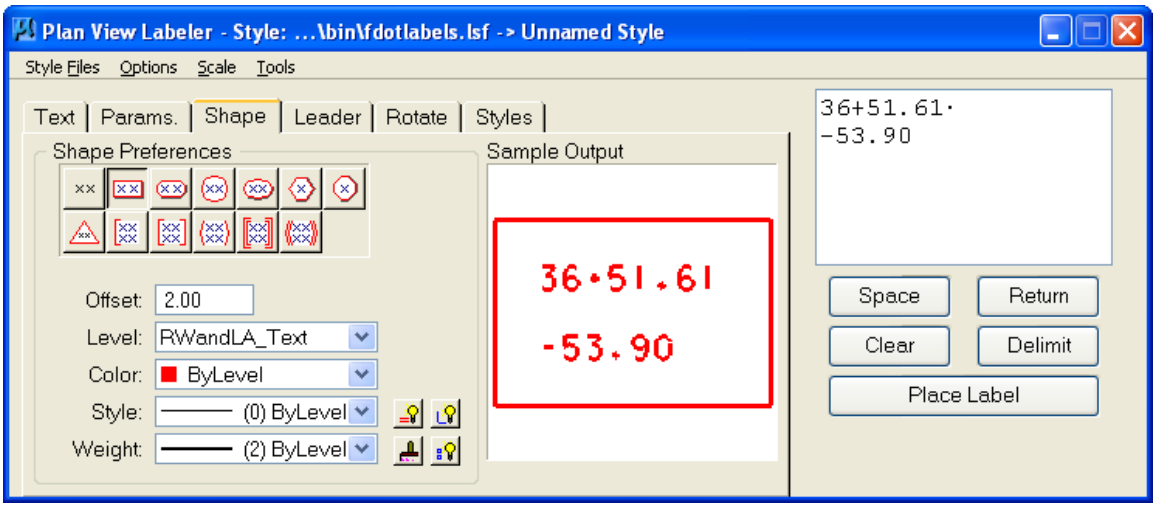
Set By Element Populates the boxes with information from a previously drawn element in MicroStation that is chosen by the user.

D&C Symbology Populates the boxes with information from an item the user selects in Design & Computation Manager.

Set All Parameters Populates the other tabs, *Shape* and *Leader*, with the current settings. This saves having to repeat this process on the next two tabs.

 © 2015 FDOT

SHAPE TAB



When the **Shape** option is selected, the dialog dynamically changes to set type and symbology of a surrounding shape. Seven shapes are supported in addition to a shapeless option. Selection of a shape draws the selected shape around the label. The shape is proportional to the size of the label. As the label gets larger, the shape is expanded to fit.

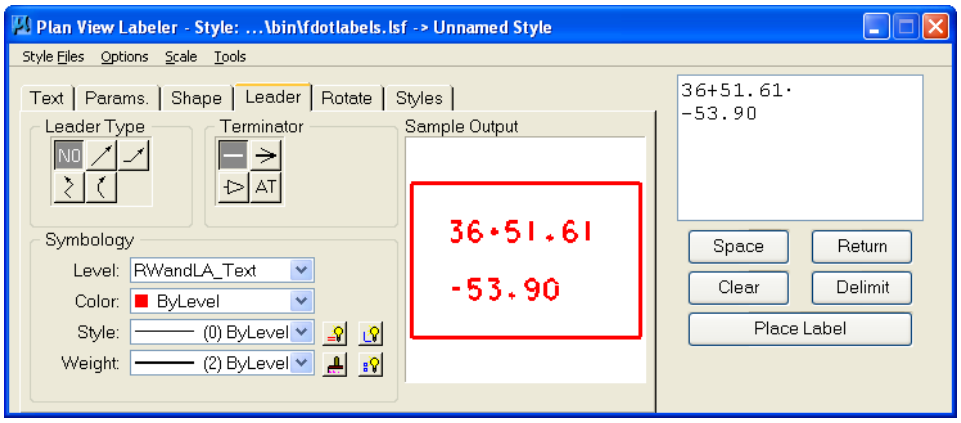
Shape Offset The distance from the edge of the text to the shape.

Symbology - Element symbology (level, weight, color and style) in which the shape is drawn. (group box)

Set By Current	Populates the boxes with information from the active level symbology in MicroStation.
Set By Element	Populates the boxes with information from a previously drawn element in MicroStation that is chosen by the user.
D&C Symbology	Populates the boxes with information from an item the user selects in Design & Computation Manager.
Set All Parameters	Populates the other tabs, *Shape* and *Leader*, with the current settings. This saves having to repeat this process on the next two tabs.

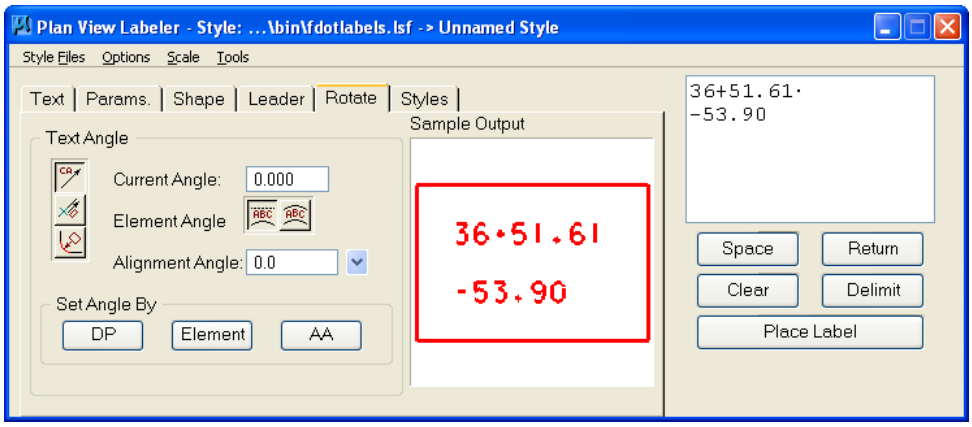
 © 2015 FDOT

LEADER TAB



The *Leader* tab allows the user to include a leader line and terminator with the text label. If no leader line is necessary, click the *NO* button under *Leader Type*. The user can select from a number of different leader types and terminators. In the preceding figure, the *AT* (Active Terminator) has been selected. Double-click in the picture area to select a custom terminator from a cell library. The cell library must be attached. Any of these options may be changed on the fly even if the selected style has a certain leader line already set up. The symbology options work exactly the same way they did in the *Params.* tab.

ROTATE TAB



The **Rotate** tab allows the label to be rotated. The rotation can be determined from the current angle, the angle of the element, or the alignment angle. The angle can also be set by two data points (first data point sets the location, next data point sets the angle) or the active angle.

Current Angle Sets the angle at the current angle.

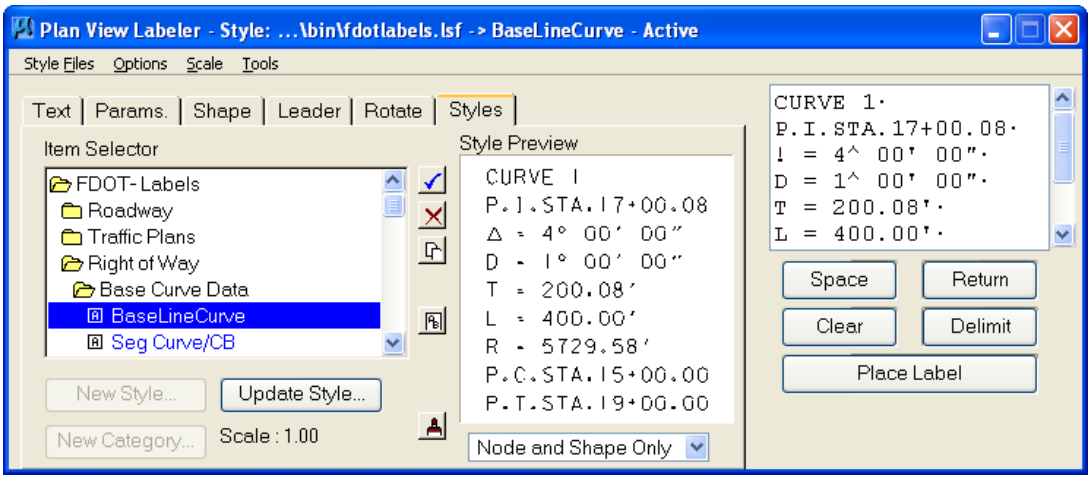
Element Angle Sets the angle based on a selected MicroStation element.

Alignment Angle Uses the chain that is specified in the text tab to rotate the label at an angle relative to the chain. This option can be used before or during the placement of a label.

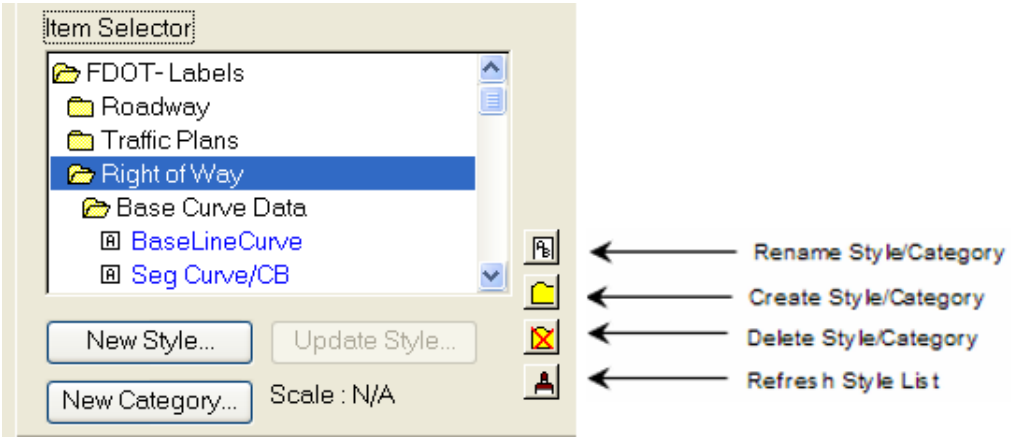
Set Angle By Allows the user to select in two data points in the drawing using the (DP) option or pick a MicroStation element with the (Element) option or set the rotation to the current angle with the (AA) option.

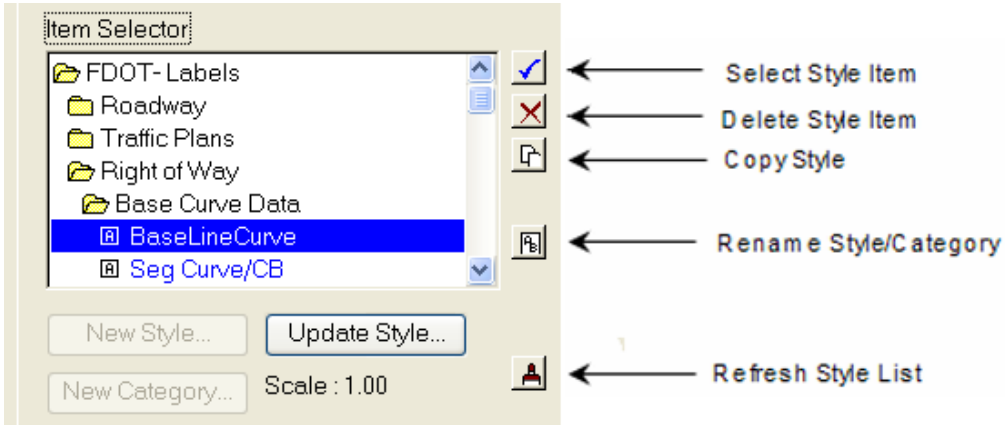
 © 2015 FDOT

STYLES TAB



The **Styles** tab allows a user to select label symbology from a library of pre-defined styles. When the user selects the style, all symbology, leaders, shapes, etc. is set up for the user.



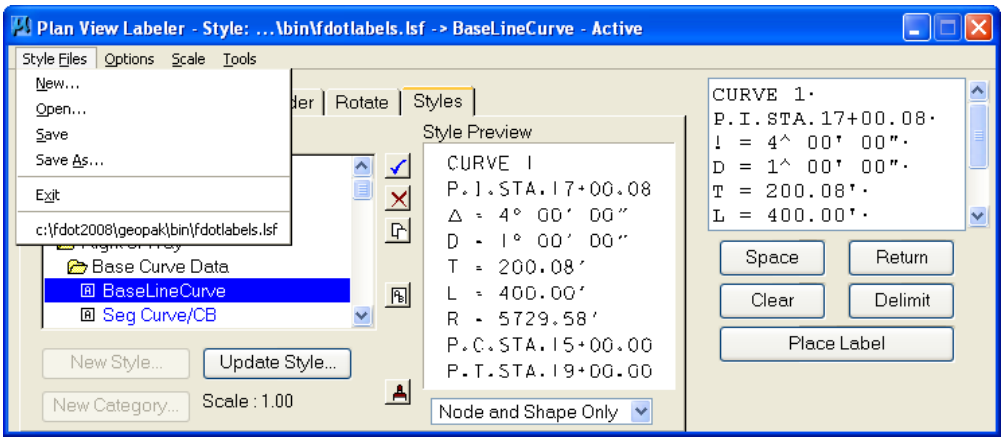


 © 2015 FDOT

PLAN VIEW LABELER MENUS

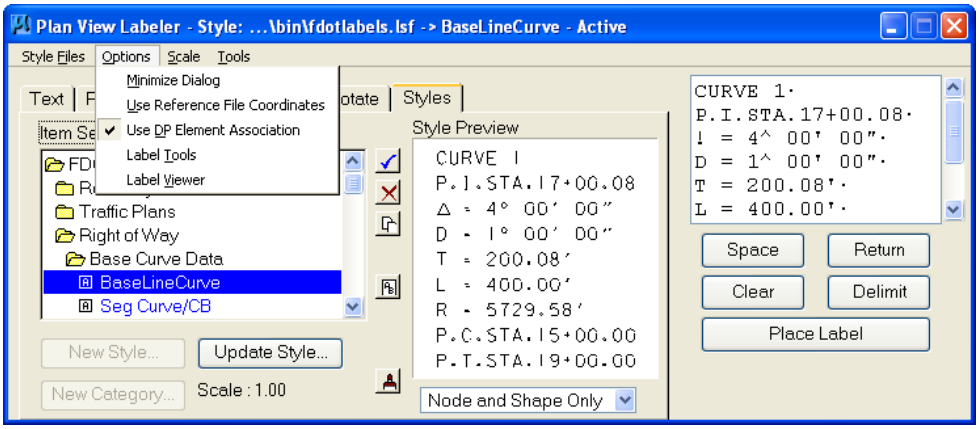
- **Style Files**

This menu allows the user to create, open, and save stored style (*.lsf*) files. The Styles tab must be selected in order to open a style library. Previously used *.lsf* files display at the bottom of the menu.

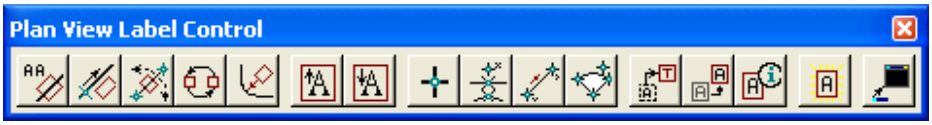


- **Options**

This menu provides five commands to aid in the placement of labels:

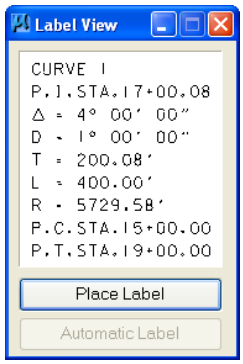


- *Minimize Dialog* – Minimizes the dialog when Place Label is chosen.
- *Use Reference File Coordinates* – Uses the coordinates from the master plan file when placing a label in a plan sheet that has rotated reference files not rotated view.
- *Use DP Element Association* – Enables the association between MicroStation elements and data point labels that are snapped to the element. If the element that is labeled with this option selected is modified, the point labels are moved with the element when the label update feature is used.
- *Label Tools* – Opens the Plan View Label Control toolbox. Using this toolbox saves the user from having to pick a style on the *Styles* tab and then click the *Text* tab to pick the method.



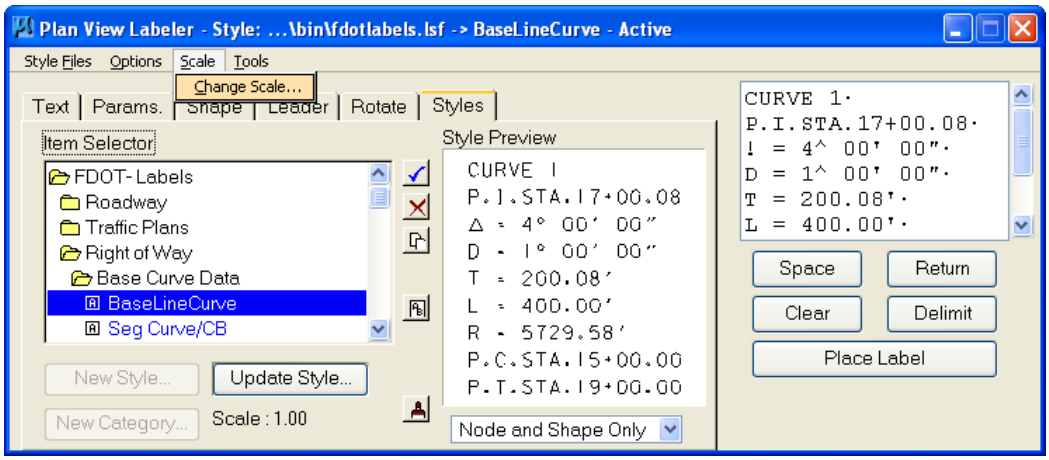
 © 2015 FDOT

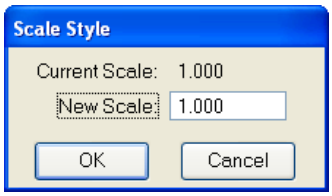
- *Label Viewer* – Activates Label View. Using this option with GEOPAK - Plan View Labeler minimized saves screen space when placing labels.



- **Scale**

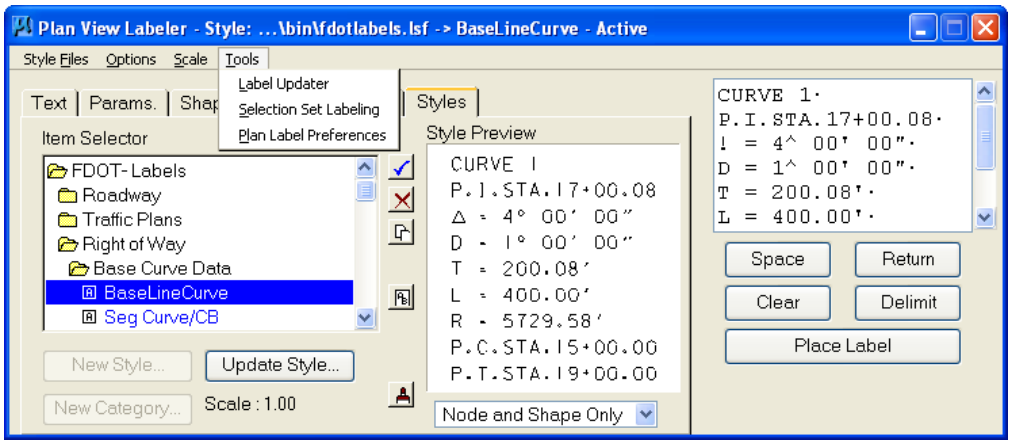
Option allows the labels to be scaled from their original creation scale. For example, if a label is created at 1:1, that label can then be scaled up to 50 by simply using this tool.





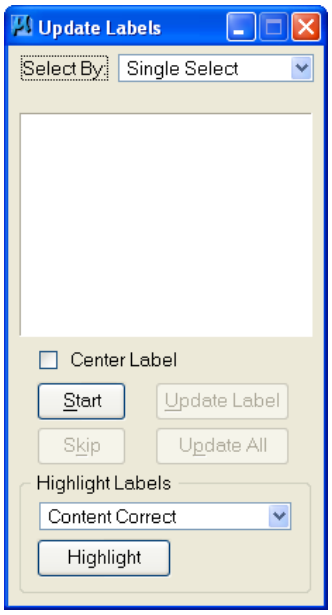
- **Tools**

The tools menu contains three tools for *Label Updater*, *Selection Set Labeling* and *Plan Label Preferences*.

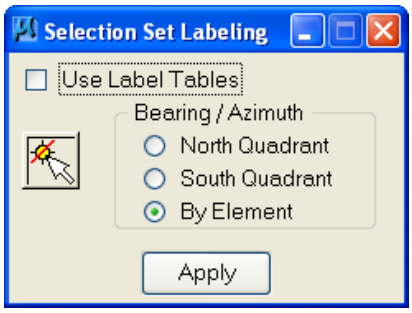


 © 2015 FDOT

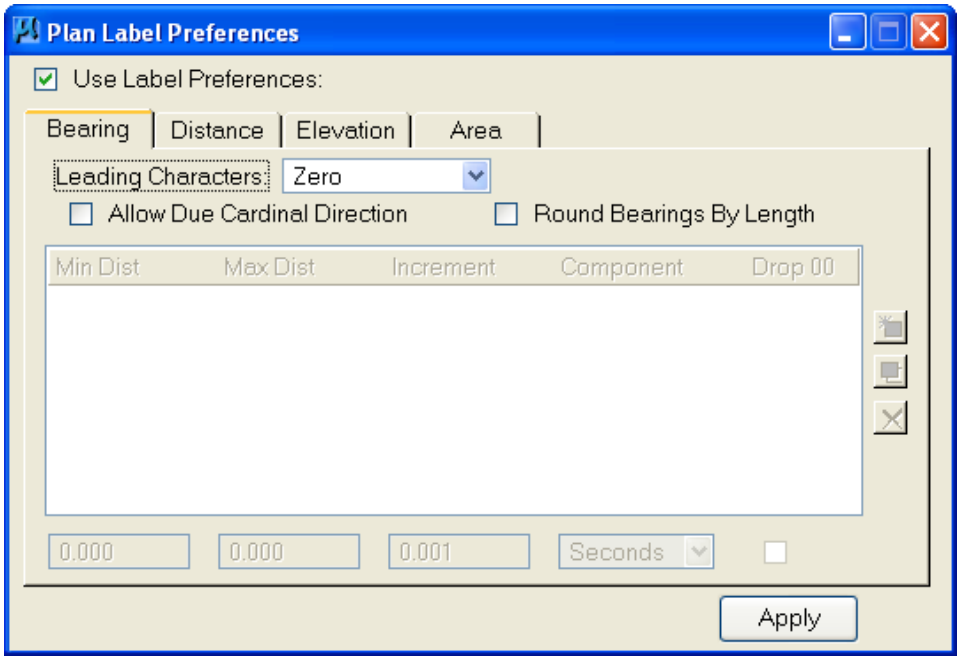
- *Label Updater* – Allows the user to replace any label that has been previously placed by Plan View Labeler with the *Use DP Element Association* option selected and to correct the label to the new contents based upon changed information.



- *Selection Set Labeling* – Allows the user to place multiple elements that need to be labeled in a selection set and mass label at one time. For example, if there are many R/W lines in the design file and a bearing and length needs to be placed on each line, that could be done with this tool.



- *Plan Label Preferences* – Allows the user to customize the plan view labels. For example, you have the options for Bearing, Distance, Elevation, and Area.



© 2015 FDOT

The user can select which of the four options (tabs) are to be utilized by activating toggles at the top of each tab. Three of the four tabs have list boxes for setting preferences for various ranges. All list boxes have the same action buttons for adding, changing and deleting entries.

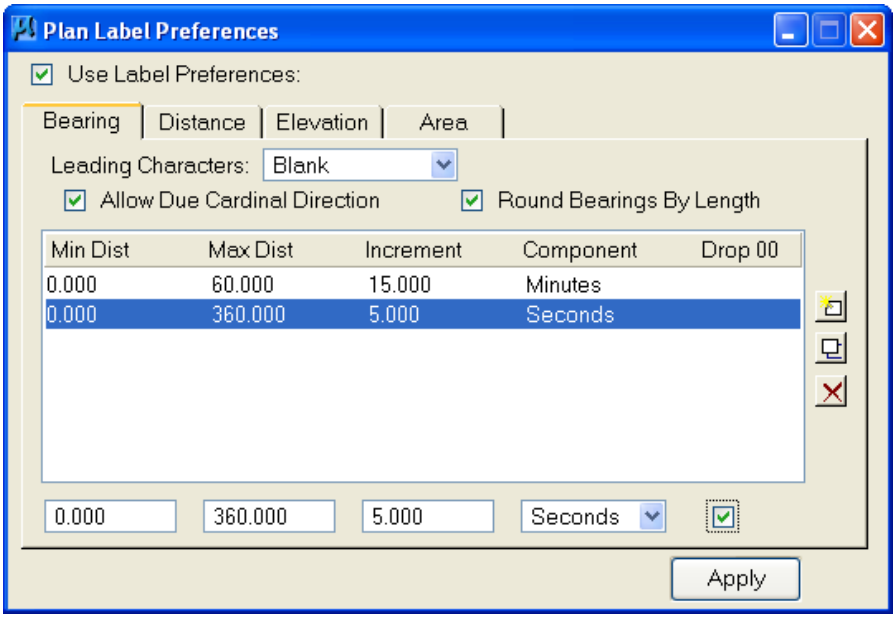
Add - populate the edit fields below the list box, then click Add.

Modify - highlight the line to be modified, which populates the edit fields. Make the desired changes, then click Modify.

Delete - highlight the line to be deleted, then click Delete.

✓ **Bearing Tab**

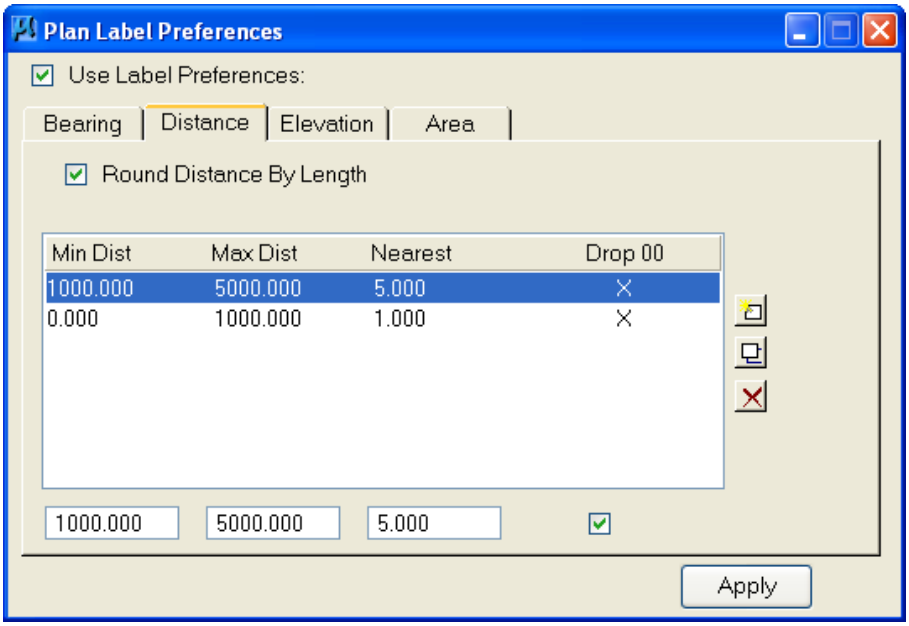
Leading characters can be set to Blank, None, or 00. Toggle on if Cardinal Directions are allowed (Due North). To utilize the Bearing option, toggle on Round Bearings by Length. Set the range by Min. Dist and Max. Distance, enter the rounding increment, and which component is to be rounded (degree, minute, second). If Drop 00 is set and the value of the component is 0, then the 00 is dropped. For example, if minutes are set to drop 00, and the label value is 5 degrees 0 minutes and 14 seconds, the label would read 5 degrees 14 seconds. If the drop 00 is not on, then entire 5 degree 0 minutes and 14 seconds would be used.



 © 2015 FDOT

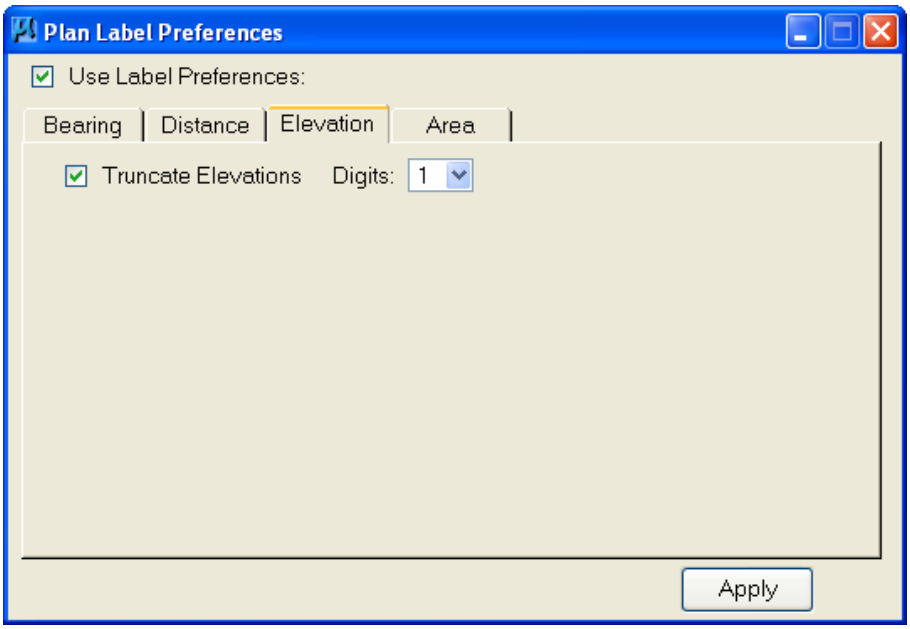
✓ **Distance Tab**

To utilize the Distance options, toggle on the Round Distance by Length. Specify the range by Min Dist. and Max Dist., the rounding Interval (Nearest) and whether to drop 00.



✓ **ElevationTab**

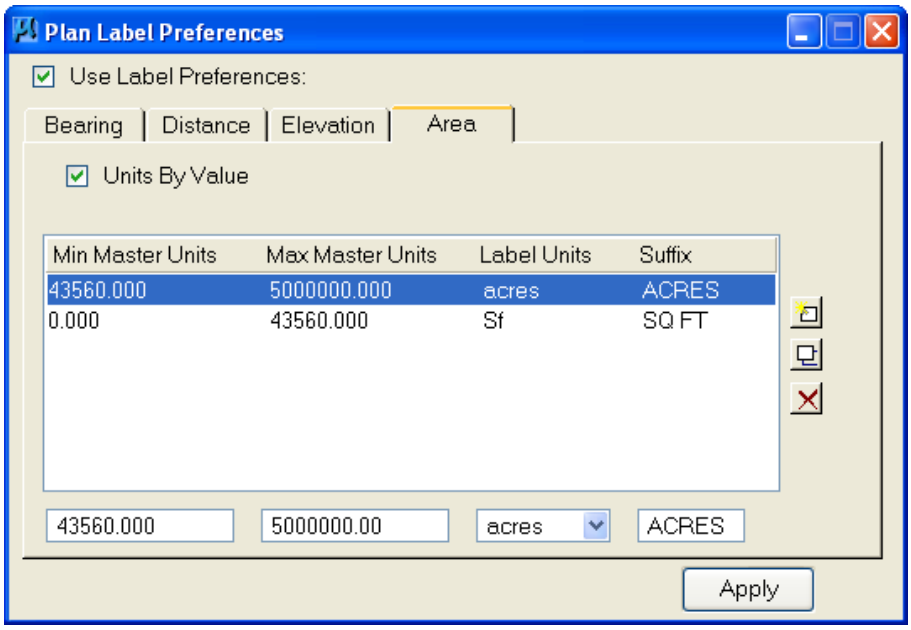
To utilize the Elevation option, toggle on Truncate Elevations, then select the number of digits for truncation.



© 2015 FDOT

✓ **Area Tab**

To utilize the Area option, turn on the **Units by Value** toggle. Enter the range by Min. Master Units and Max. Master Units, the Label Units and Suffix.

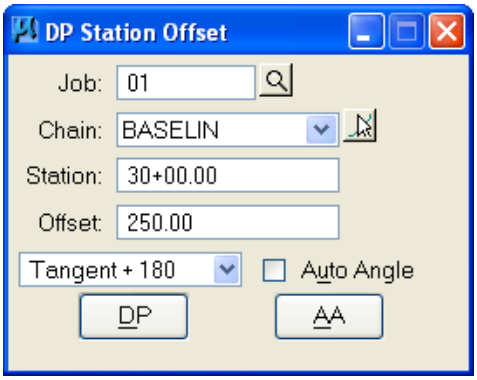


DP STATION/OFFSET

The *DP Station/Offset* tool works in conjunction with MicroStation commands and the D&C Manager. It can be used as the *data point* for any MicroStation command. DP Station/Offset provides precision placement of elements based on a station and offset of a stored chain. Uses for this command include precision placement of elements and window functions.

The *DP Station/Offset* tool can be accessed by selecting **Applications** > **GEOPAK ROAD** > **Plans Preparation** > **DP Station/Offset**. It can also be invoked from the GEOPAK ROAD Tools tool frame and the *Plan View Design* toolbox in Project Manager.

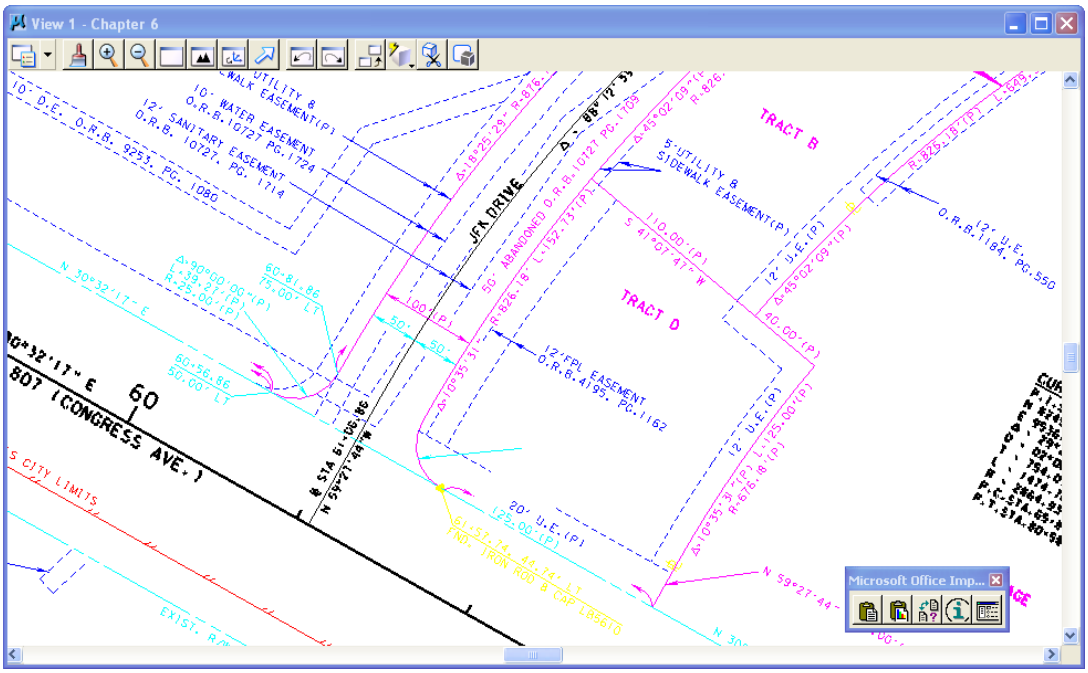
When the *DP Station/Offset* tool is accessed, the following dialog displays.



 © 2015 FDOT

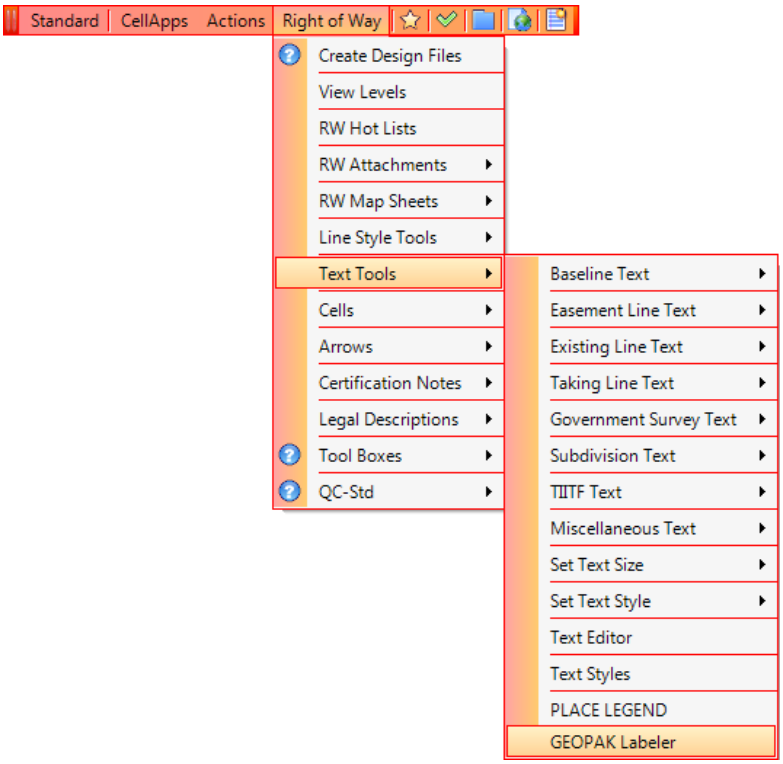
Exercise 6.1 Partial Parcel Labeling

1. Open the MicroStation file C:\E\Projects\12345678901\rwmap*rw1234567.dgn*. Open the **Chapter 6** *Model* and go to the *Saved View* **TRACT D Chapter 6**. The MicroStation view should display as shown.

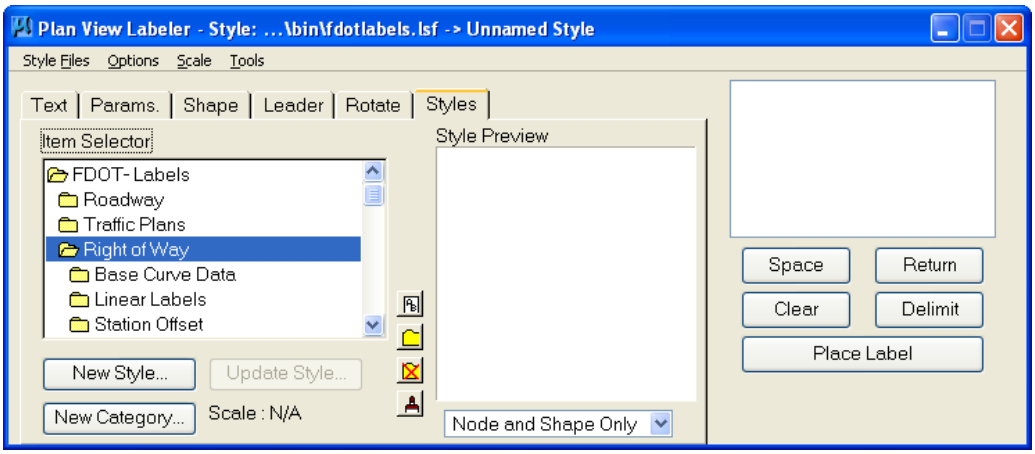


Note The proposed Right-of-Way line has been removed for the purpose of clarity in this exercise.

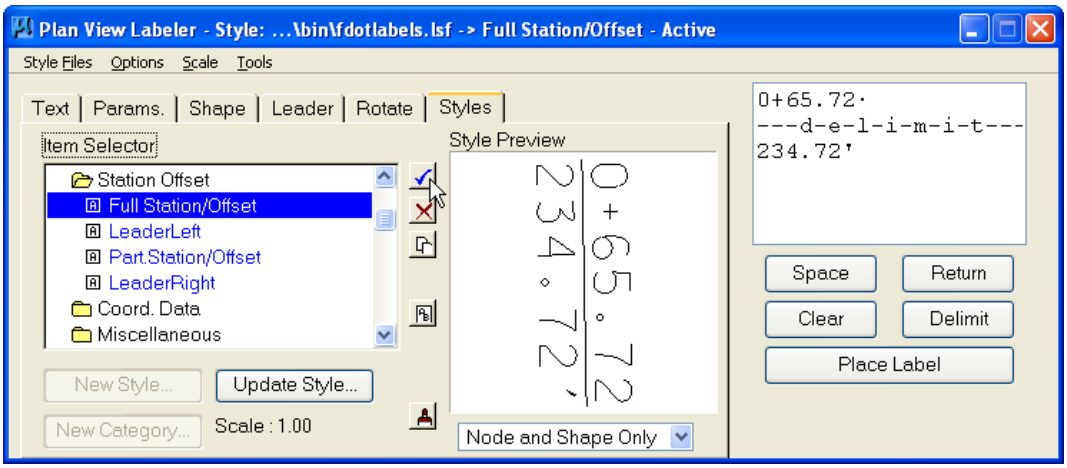
2. From the Right of Way FDOT Menu, select **Text Tools > GEOPAK Labeler**.



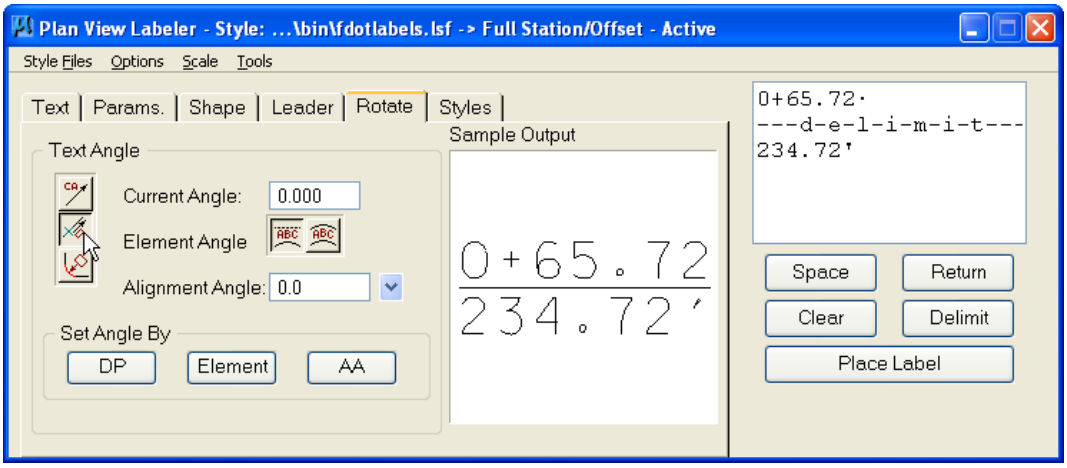
3. From the Plan View Labeler dialog, select the **Styles** tab and double-click on the **Right of Way** folder to expand the selection as shown next.



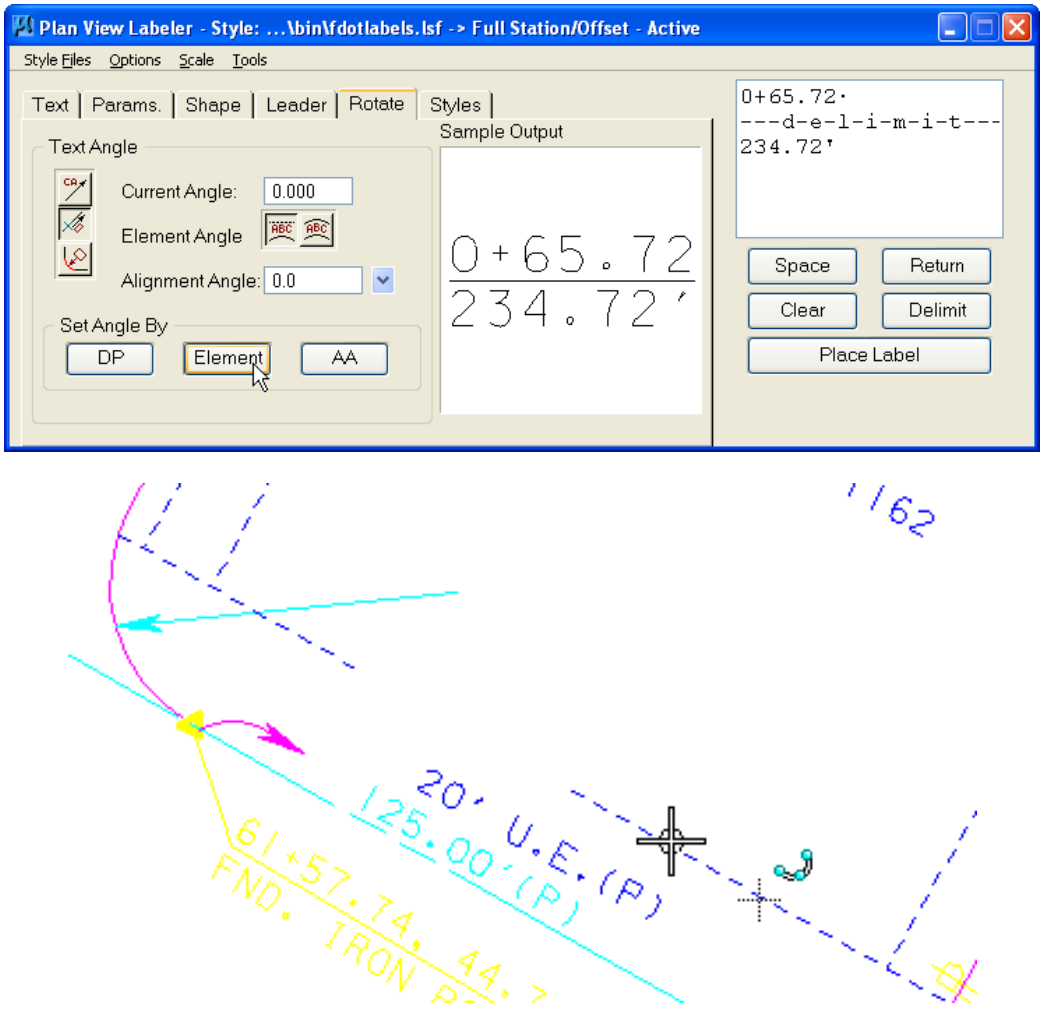
4. Scroll down and double-click on the **Station Offset** folder to expand the selection. Highlight the **Full Station/Offset** style and click the **Blue Checkmark** icon to make the **Full Station/Offset** style active.



5. From the *Rotate* tab, select the **Element Angle** icon.

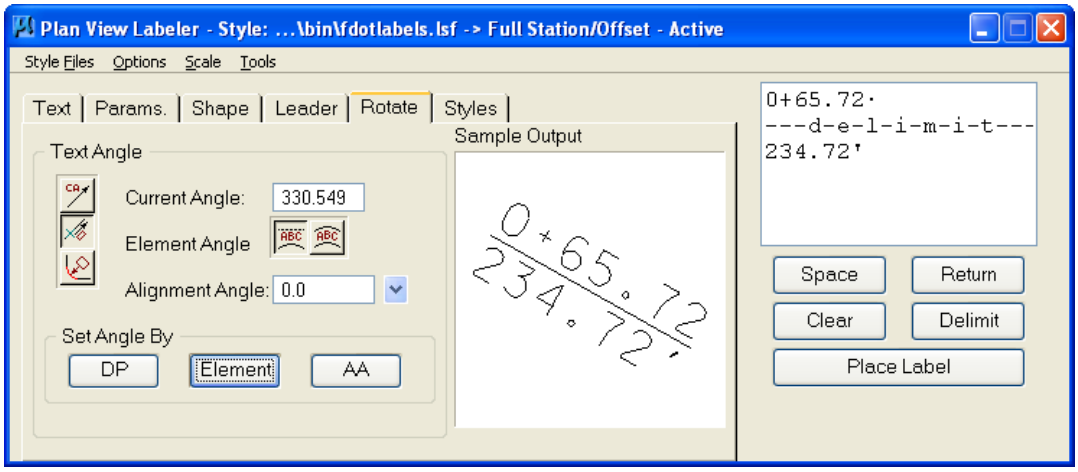


6. Next, click the **Element** button and then click on the **easement line** as shown below.

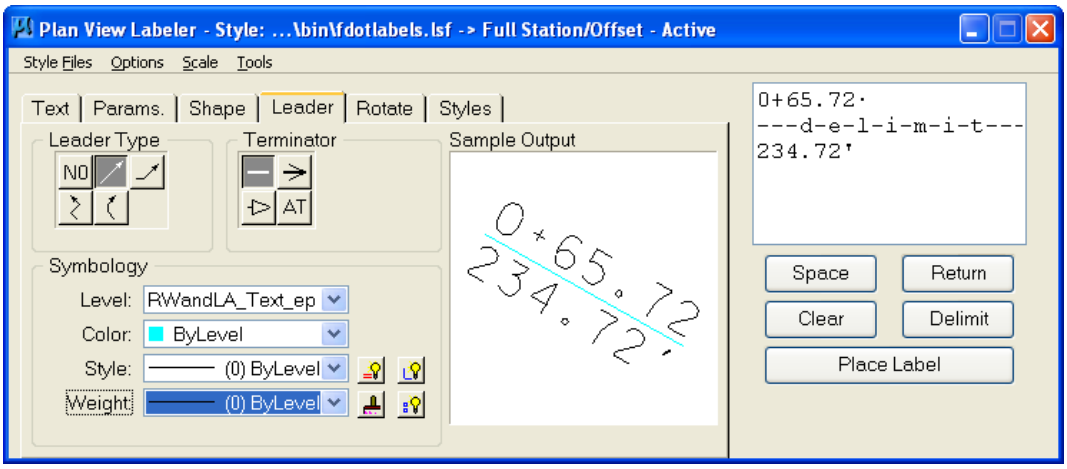


7. This will set the text angle to be parallel with the Southwestern boundary of the *Parcel* **TRACT D**. This will also attach the text to the MicroStation cursor.

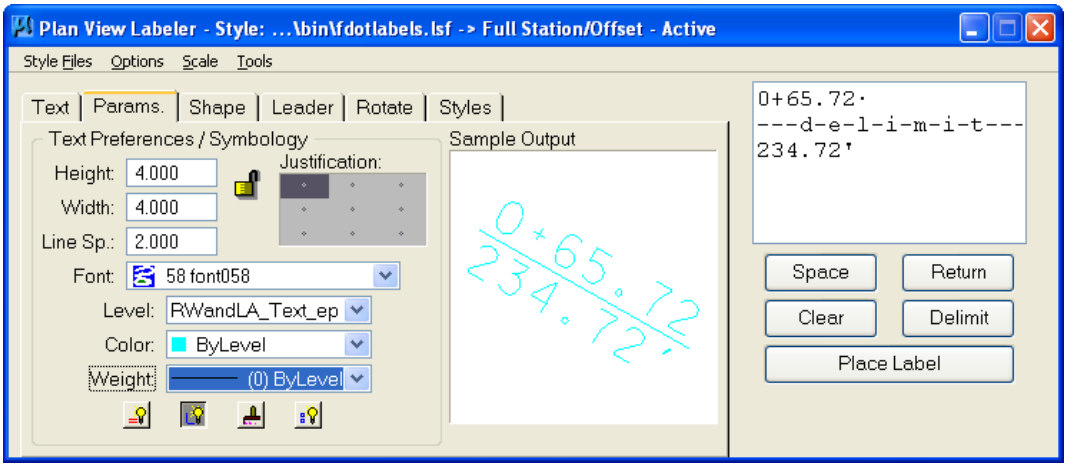
Note **Do not place the text yet, as the ByLevel Symbology is not set.**



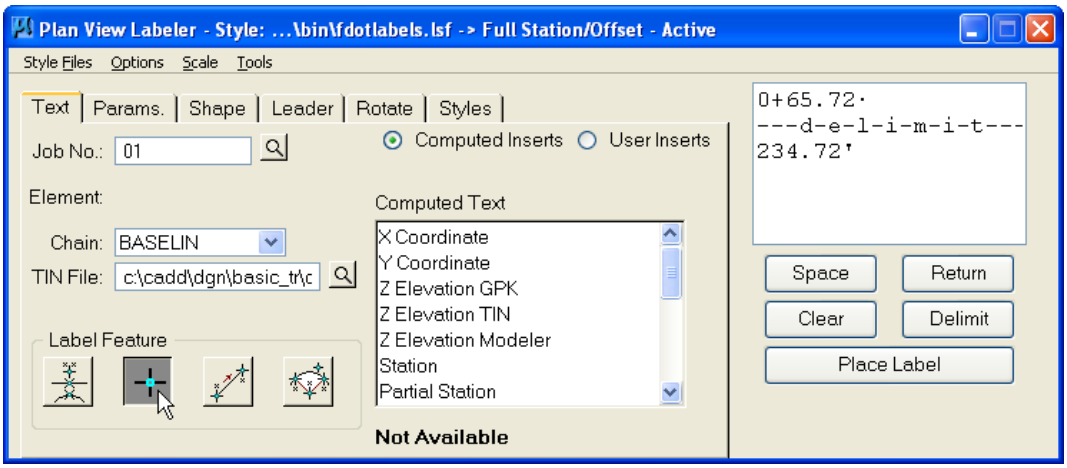
8. From the *Leader* tab, match the settings as shown below. Make sure that the *Symbology* is set to use the **RWandLA_eText** ByLevel.



9. From the *Params* tab, match the *Text Preferences / Symbology* are set as shown below. This will ensure the correct *Text Scale* and *ByLevel* settings for the label.

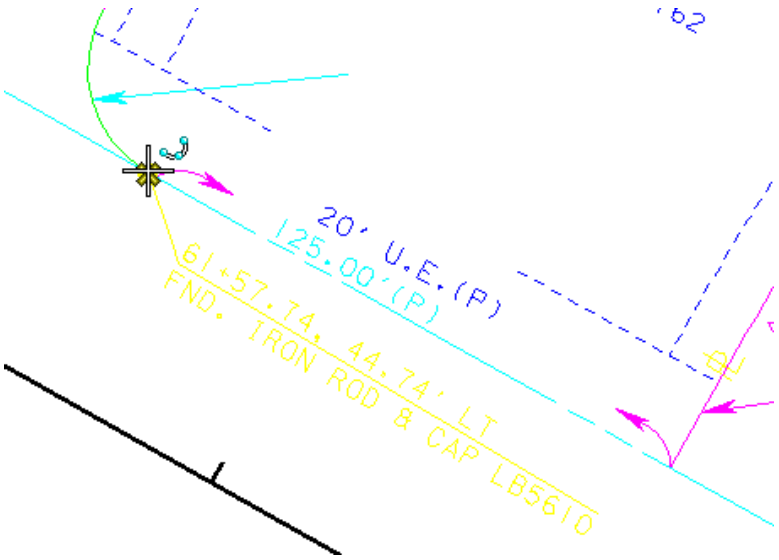


10. From the *Text* tab, click the **Data Point Location** button.

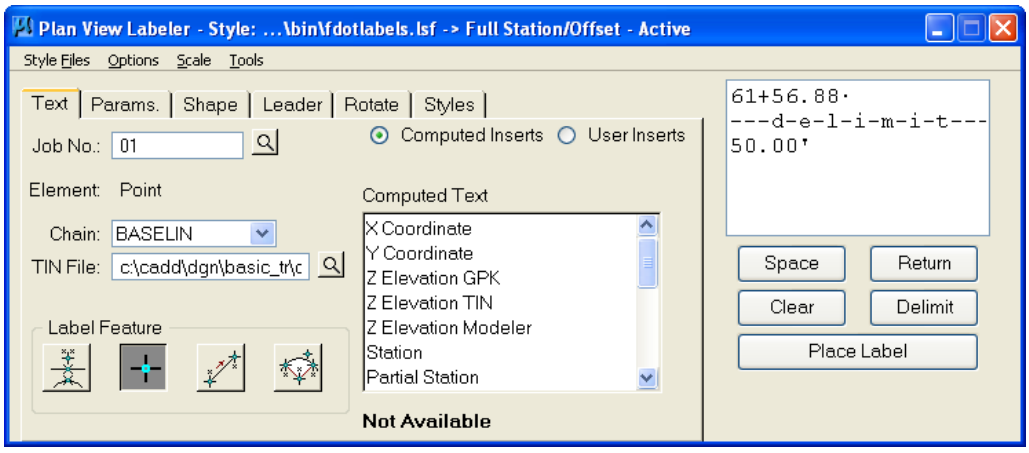


 © 2015 FDOT

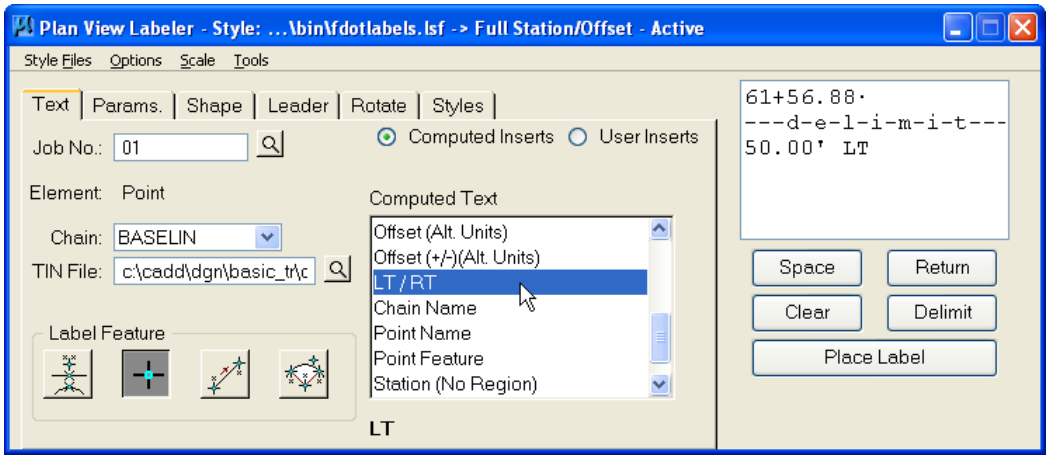
11. Place a **Data Point** in the location shown.



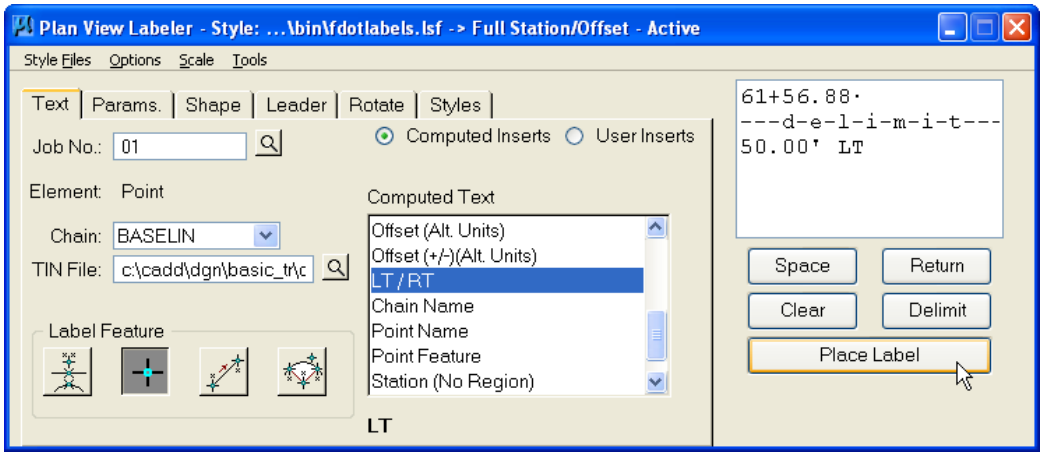
12. The Plan View Labeler will update the **Text** to reflect the *Data Point* location.



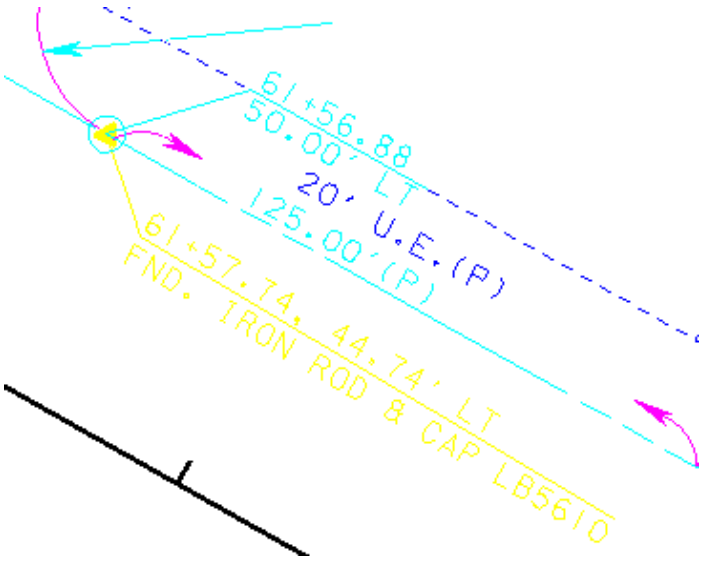
13. Continuing in the *Text* tab, double-click on the **LT/RT** *Completed Text* to add the offset label to the text preview window as shown below.



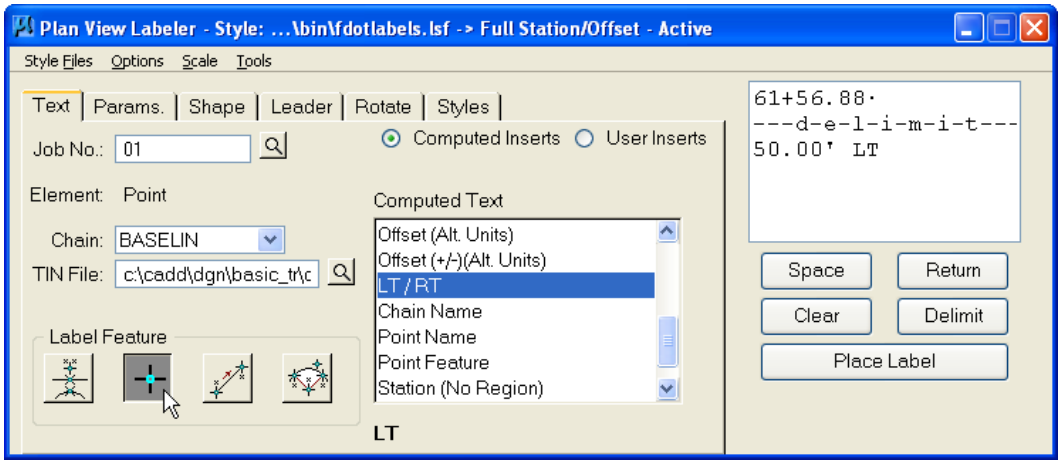
14. From the Plan View Labeler, click the **Place Label** button.



15. Place the label in the location shown. The first click will *place the Text* and the second click will *select the side of the Delimiter* on which the leader is to be connected.

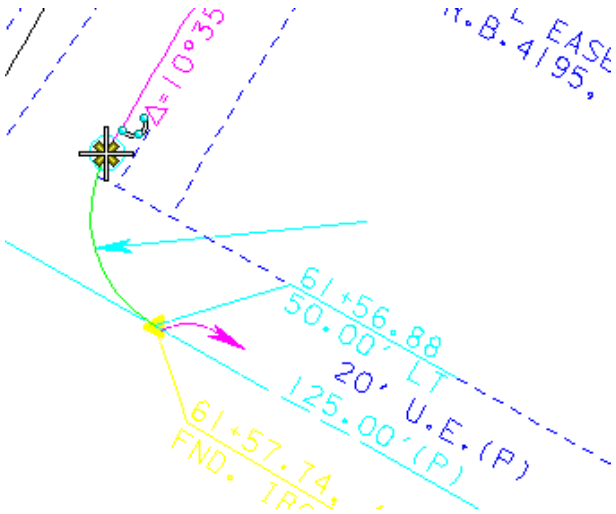


16. From the *Text* tab, click the **Data Point Placement** icon as shown.

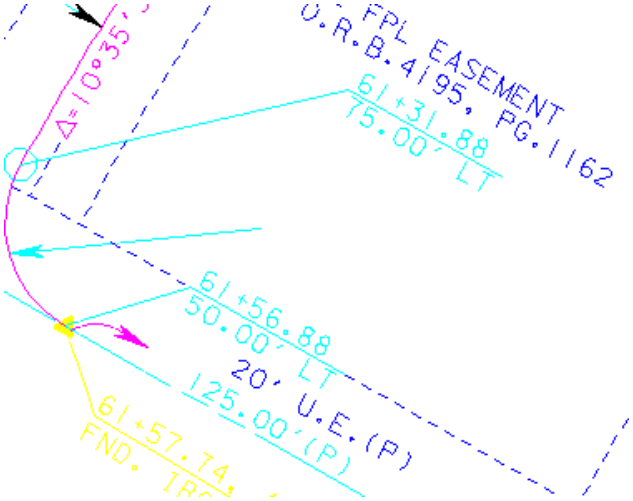


 © 2015 FDOT

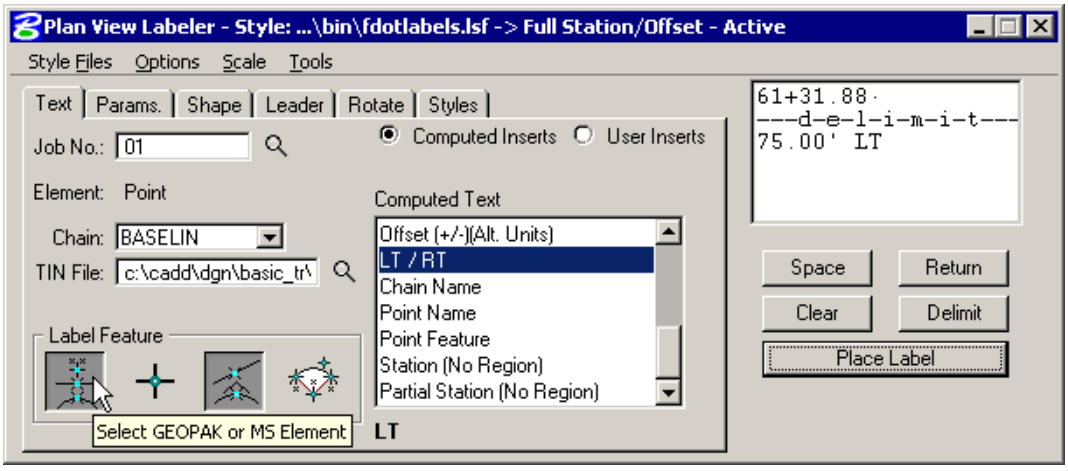
17. Place the **Data Point** in the location shown next.



18. Click the **Place Label** button and place the label in the location shown next.

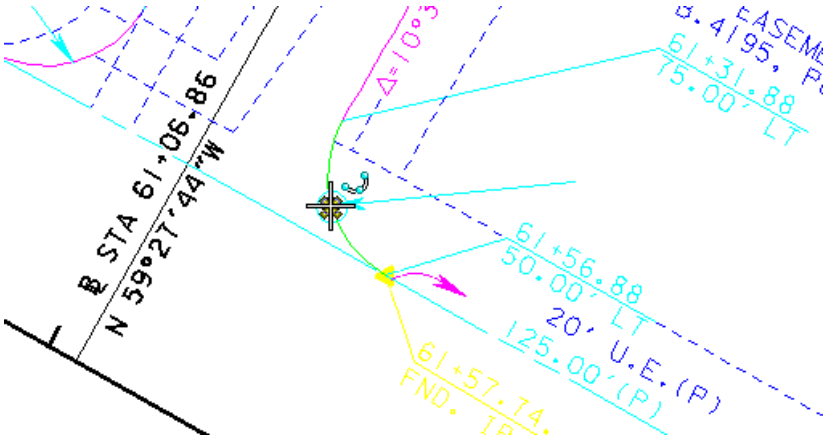


19. Continuing in the Plan View Labeler, click the **Select GEOPAK or MS Element** icon as shown below.

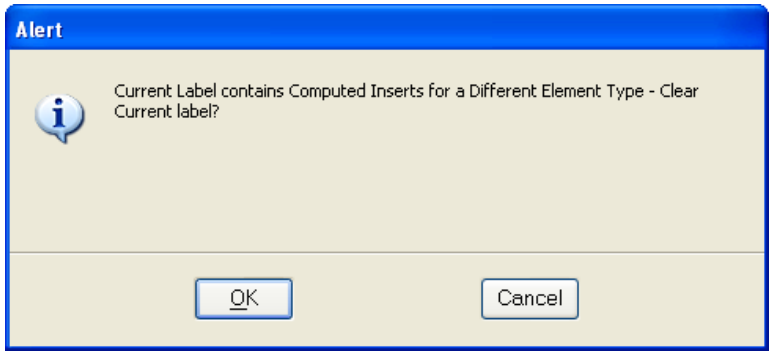


 © 2015 FDOT

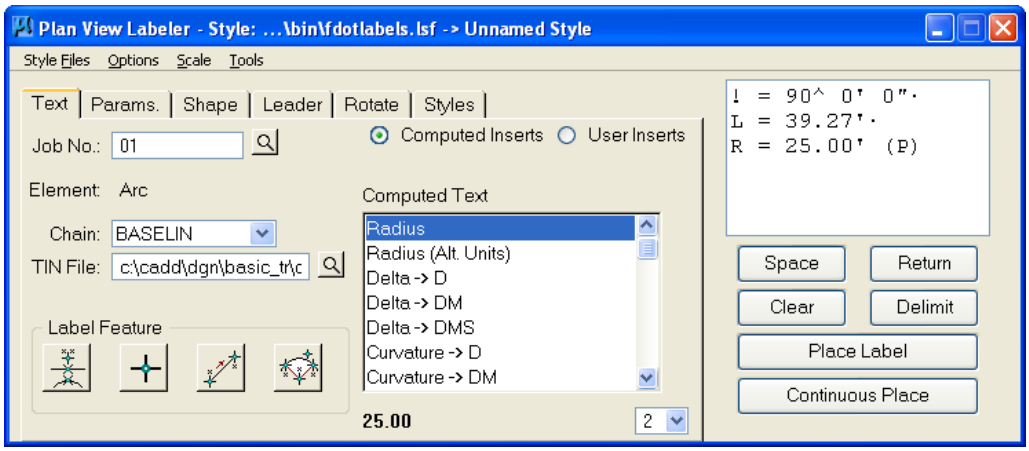
20. Double-click on the curve as shown.



21. Click **OK** to the following prompt. This will update the available **Computed Text** that is available to the user for placement in the MicroStation DGN file.



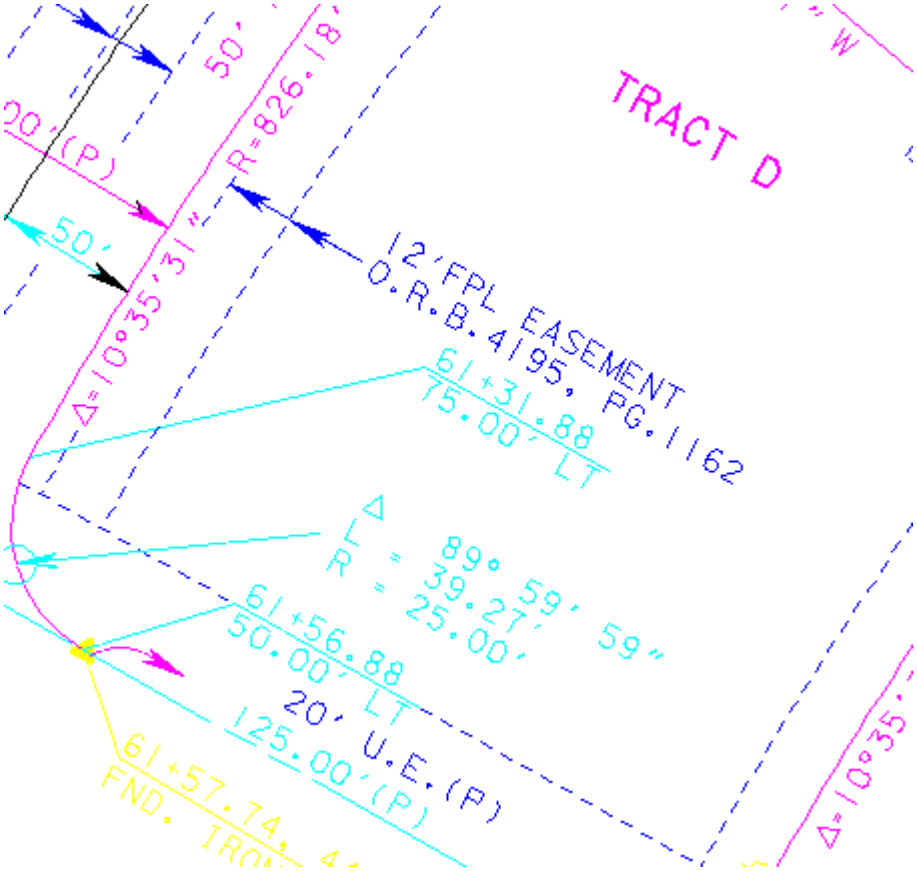
22. From the Plan View Labeler, double click on **Delta -> DMS, Curve Length**, and **Radius** to add those items to the Text Preview window. Click the **Return** button between each entry in order to create separate lines. The **"!", "L = ",** and **"R = "** text will need to be manually added. Click **Place Label** to attach the label to the MicroStation cursor.



Note Since the leader is already in the DGN file, it will be necessary to turn off the leader option using the **Leader** tab.

 © 2015 FDOT

23. Place the label in the location shown.



7 RIGHT OF WAY FDOT MENU

OBJECTIVES

This chapter will review the FDOT2010 FDOT Menu inside of the MicroStation V8i design environment. Items covered in this chapter:

- FDOT Menu Advantages
- FDOT Menu Standard Configuration
    - Getting Started
- FDOT Menu Pull Downs
    - Standard Pull Down
    - CellApps Pull Down
    - Locks Pull Down
    - Utils Pull Down
- FDOT Menu Hot Boxes

INTRODUCTION

To enable the FDOT CADD user to be more productive, the FDOT Engineering CADD Systems Office (ECSO) has made available and customized a tool called FDOT Menu. FDOT Menu was created and designed with the frequent MicroStation user in mind and consists of four components.

The primary component of FDOT Menu is a floating toolbar used to group and launch MicroStation commands, macros, and custom FDOT and GEOPAK applications. This toolbar itself has a Standard configuration to which additional discipline specific menus, such as Roadway, Right-of-Way, Utilities, Structures, Geotechnical, and Photogrammetry, can be added. The FDOT Menu also includes floating command buttons that provide shortcuts to Plotscale settings, Quality Control (QC) software, Command Tables, Internet Explorer, and Sheet Navigator.

This chapter will concentrate on the basic operation of FDOT Menu in its Standard configuration. The next chapters will address configuring and using the Right of Way discipline specific portion of FDOT Menu.

FDOT MENU ADVANTAGES

- Uniform standards interface for MicroStation
- Uses less screen space as compared to conventional dialogs and menu bars
- Instant, on-demand activation of commands and resources
- Windows desktop positioning for optimum screen utilization
- More efficient workflow by grouping commonly used MicroStation commands, macros, and custom FDOT and GEOPAK applications

FDOT MENU STANDARD CONFIGURATION

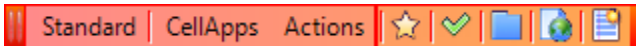
FDOT Menu provides a highly customizable, simple and unobtrusive CADD standards interface. Menu content is managed from ASCII text files. The power of FDOT Menu lies in the versatility and simplicity of its interface

components, resulting in maximum CADD standards compliance. FDOT users are more productive because design automation is easier to access, while drawings are higher quality because computer-aided design standards can be implemented agency-wide. FDOT Menu in its Standard configuration has three menus **Standard**, **CellApps**, and **Actions,** along with five (5) **Command** buttons: *Plot Scale, QC Quick, Show Command List, Open Browser* and *Label Sheets(Sheet Navigator)*.

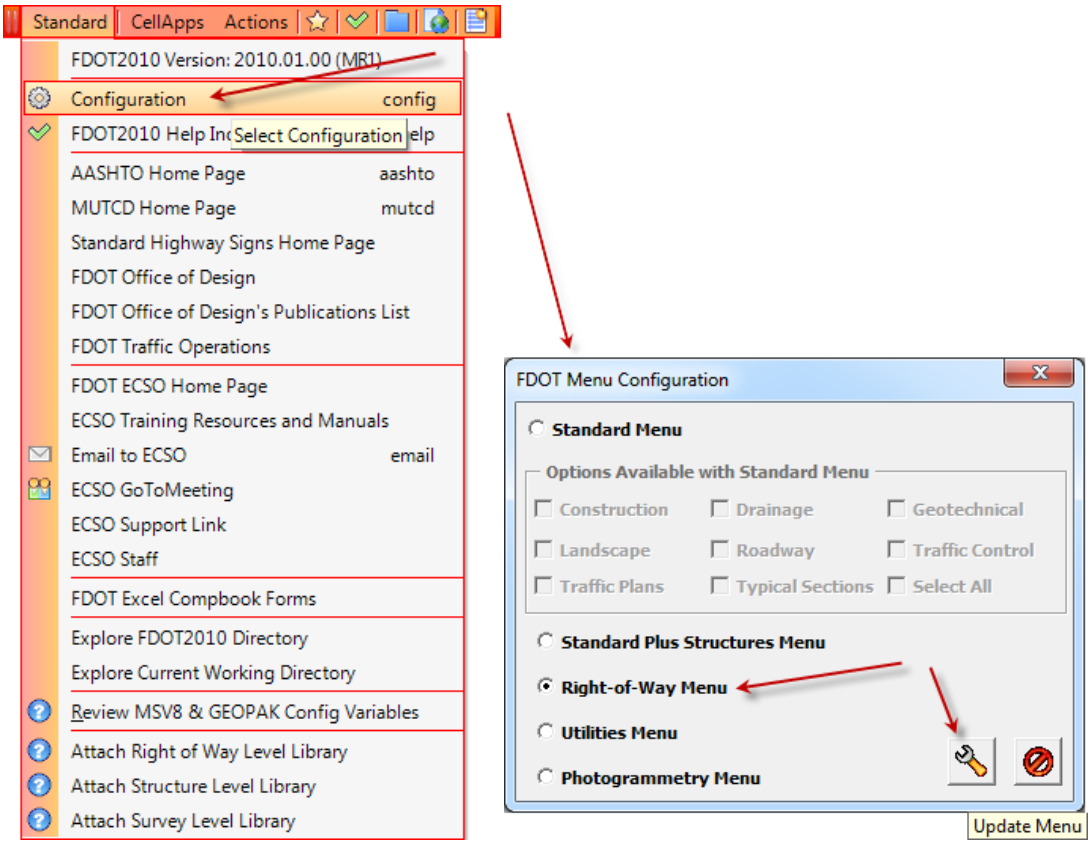
GETTING STARTED

FDOT Menu includes a floating toolbar that is used to activate commands inside MicroStation and provides an efficient, portable, pull-down menu interface to access all FDOT CADD standards and customization. The FDOT Menu will display one of two ways:

Standard FDOT Menu:



Add the Right of Way menu from the **Standard > Configuration** FDOT Menu option as shown below. From the FDOT Menu Configuration dialog, select the **Right-of-Way Menu** radio button, and then the **Update Menu** button. MicroStation will close and need to be re-opened to reflect the change.

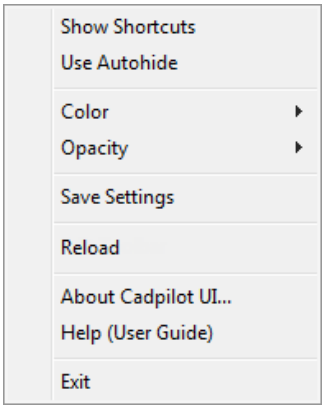


Standard FDOT Menu plus Right of Way

Whenever the cursor is moved over any command from the FDOT Menu pull-downs, the key-in command for that item will be displayed in the lower left of the MicroStation Status Bar.

Left-click and drag on the far left side bar of the FDOT Menu to reposition anywhere on the screen. Use **Save Settings** to retain the new position for subsequent MicroStation sessions.

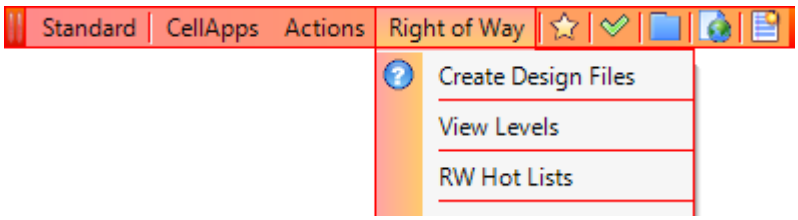
Right-click on the FDOT Menu to activate the context menu:



- **Show Shortcuts** - Displays FDOT Menu Shortcuts. Each menu item can be assigned a shortcut that may be issued via keyin to launch the menu item or the menu item documentation. The default shortcuts can also be overridden using specified shortcuts.
- **Use Autohide -** when checked any display window (Browser, TreeView or TabList) will hide. Leaving this unchecked these windows will stay open for repeat commands.
- **Color** - Allows the user to change the color of the FDOT Menu. Select from red, blue, green and silver.
- **Opacity** - Allows the user to adjust how opaque or transparent the menu is.
- **Save Settings** - Saves the current screen location of the FDOT Menu
- **Reload** - Reloads FDOT Menu, re-creating all interface components from current configuration variable settings.
- **About CADPilot UI**...- Loads an information dialog about FDOT menu, including version and registration details.
- **HELP** - Loads this online Help documentation.
- **Exit** - Closes FDOT menu.

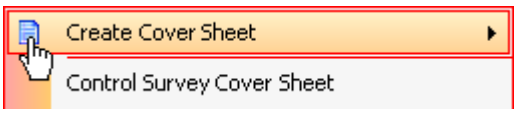
EXECUTING FDOT MENU COMMANDS

To execute FDOT Menu commands, left-click on the main pull-down menu; then, left-click on the desired command.



HELP DOCUMENTATION LINK

If a FDOT Menu command has a **Documentation Link** icon next to it, left-click on the **Documentation Link** icon to bring up the associated documentation for the command.



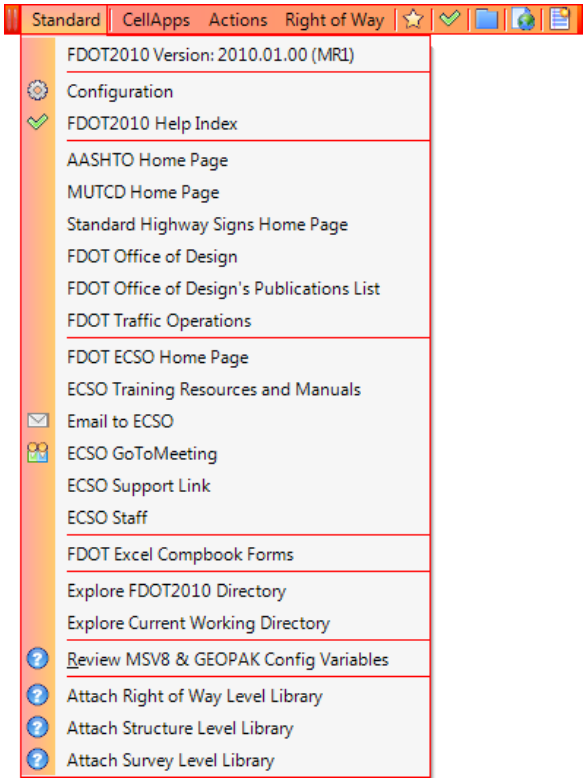
 © 2015 FDOT

STANDARD FDOT MENU

FDOT Menu in its Standard configuration has three menus **Standard**, **CellApps**, and **Actions**. Each of these menus has a specific grouping of functions, commands, and other tools. These groupings allow the FDOT user to become more efficient in their use of MicroStation and its associated applications by providing a common location for accessing items that would normally be somewhat divided among MicroStation's many menu pull-down menus.

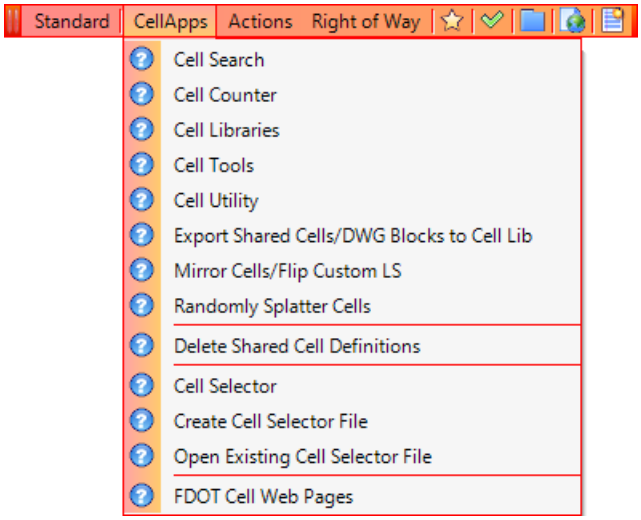
STANDARD MENU

Under the **Standard** drop down menu is web pages for reference and help files. FDOT Menu Configuration is used to change the standard menus that are displayed.



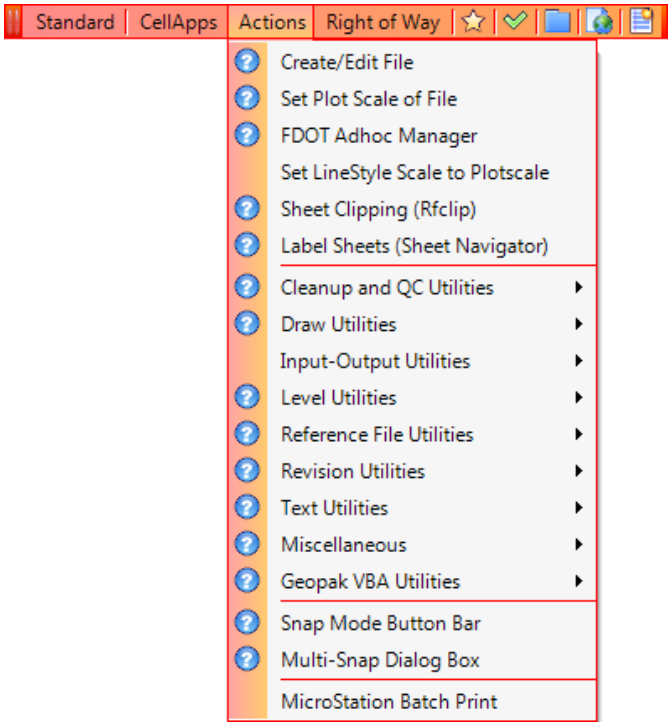
CellApps Menu

Under the **CellApps** drop down menu are cell manipulation tools.



Actions Menu

Under the **Actions** drop down are utilities for many different project operations.

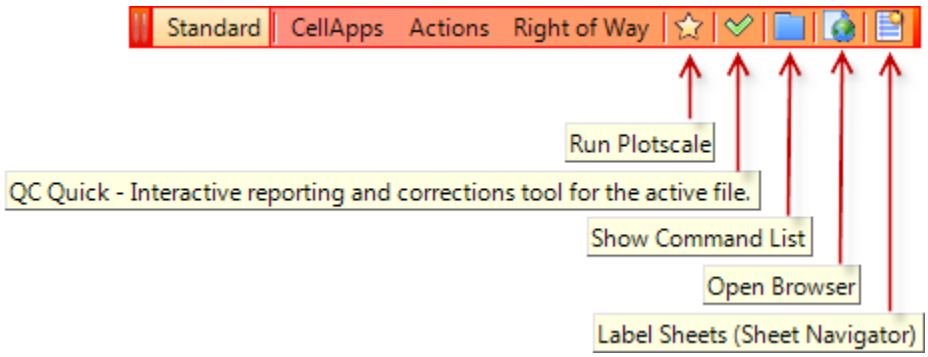


 © 2015 FDOT

FDOT MENU COMMAND BUTTONS

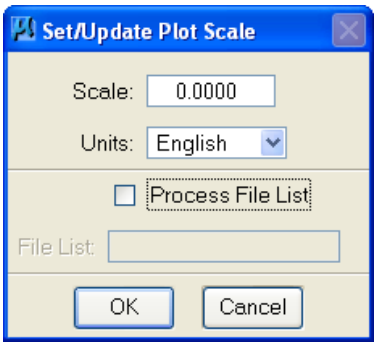
Although the primary component of FDOT Menu is the floating toolbar, there are five other components called **Command** buttons. The **Command** buttons are located at the end of the FDOT Menu Bar and allow users quick access to **Plotscale, QC Quick**, **Show Command List, Open Browser** and **Label Sheets (Sheet Navigator).**

To access the shortcuts represented by the **Command Buttons**, the user simply clicks on any button.



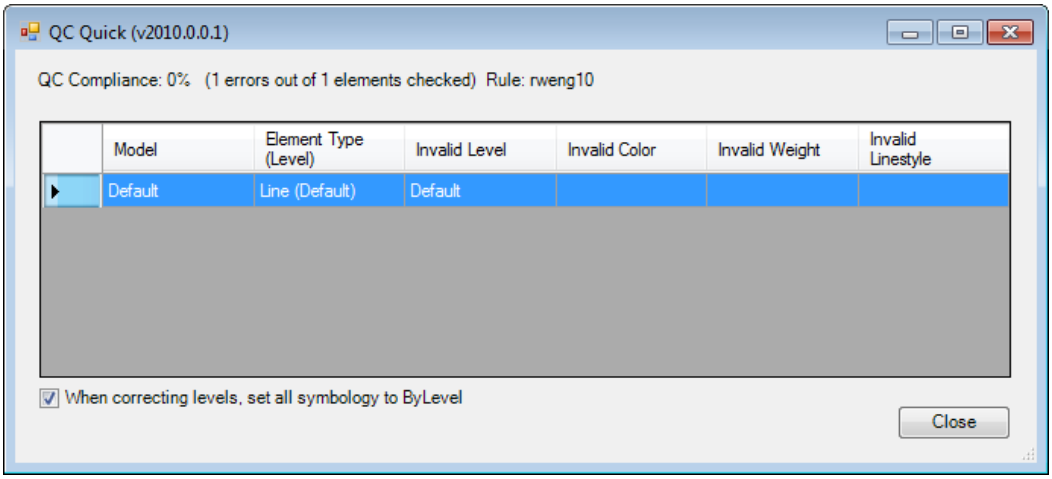
RUN PLOTSCALE

Clicking the Run Plotscale button brings up the Set/Update Plot Scale window.



QC QUICK

Clicking the **Run** QC Quick button runs the FDOT symbology checking tool and brings up the interactive QC Quick dialog that displays all Invalid (Non-standard) Levels and Symbology for the open DGN file. This dialog provides correction functionality for the user to apply valid Standard Rules to each of the Invalid entries.

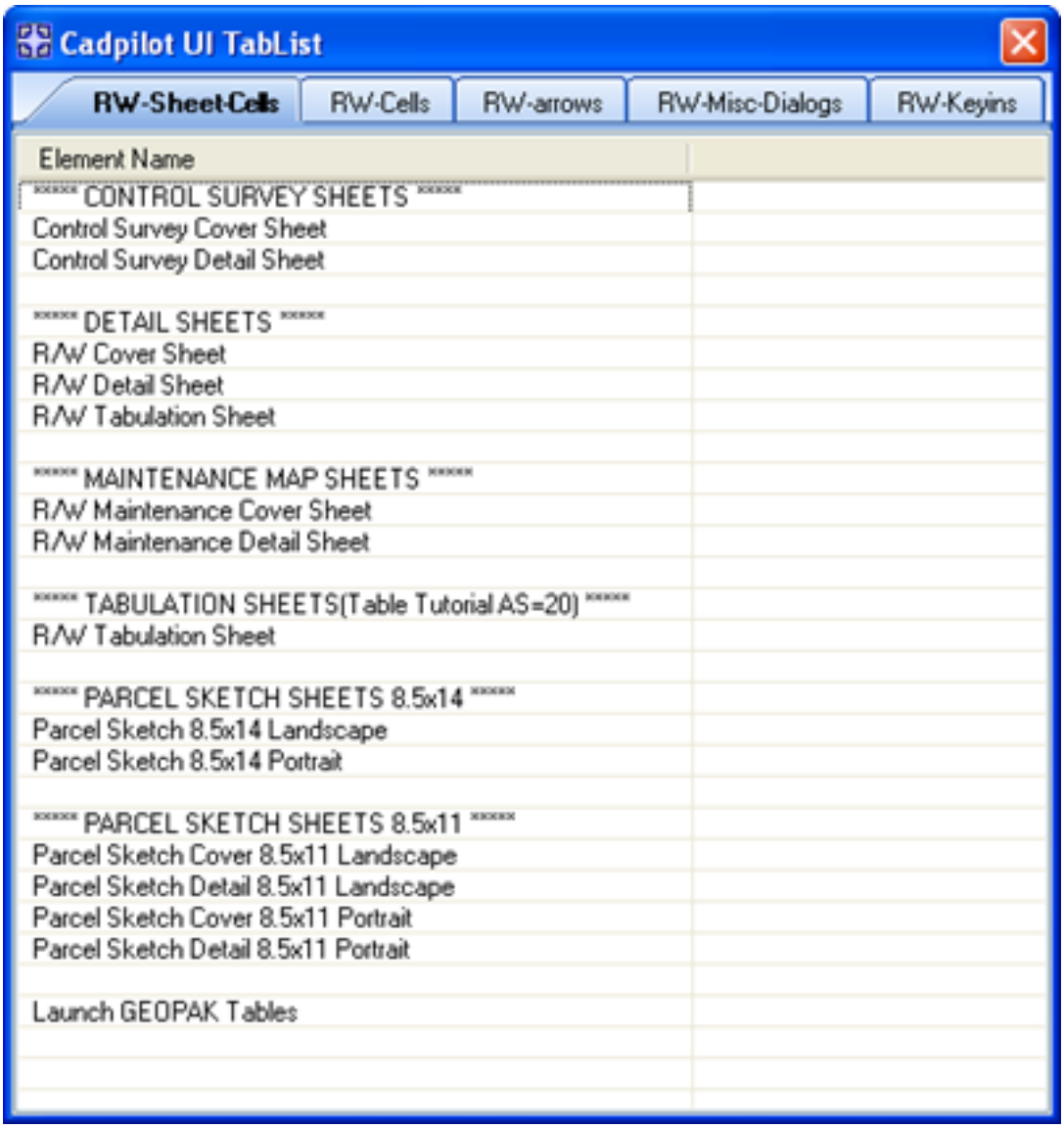


SHOW COMMAND LIST

Clicking the **Show Command List** button brings up the appropriate TabList dialog. The TabList provides a set of tabs each of which contains a shortcut to FDOT Menu commands. The Show Command List button is sensitive to the current configuration of FDOT Menu as shown.

- RW-Sheet-Cells TabList

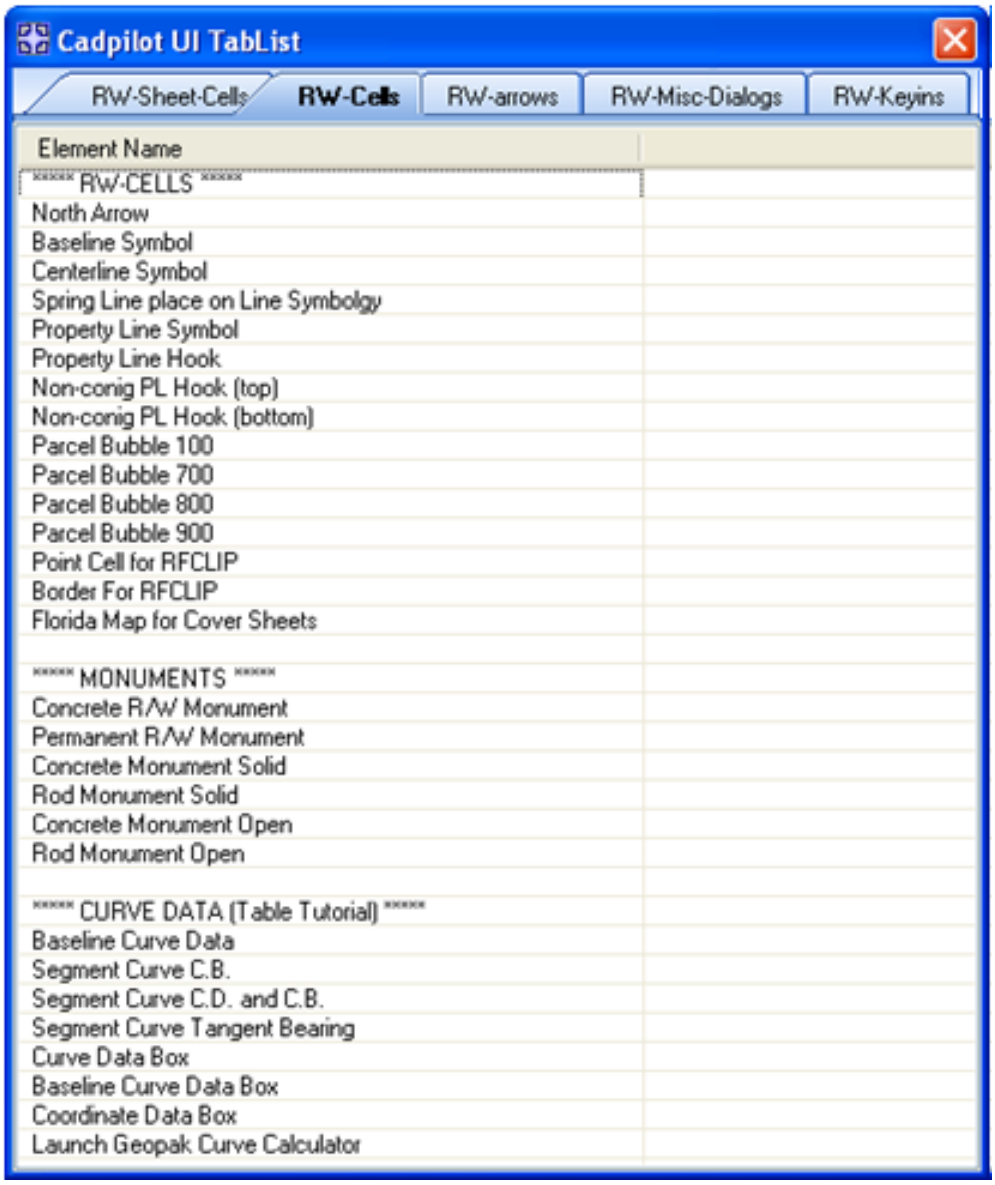
The *RW-Sheet-Cells* tab provides a listing of the Mapping sheet cells for placement into the MicroStation design file. The same process is used for placement of sheet cells as described under RW-Cells shown later.

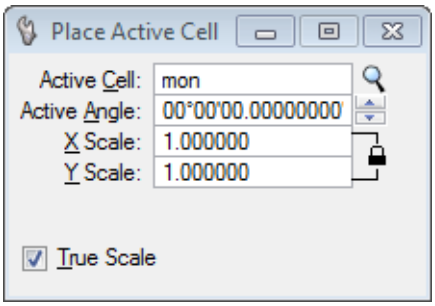


 © 2015 FDOT

- RW-Cells TabList

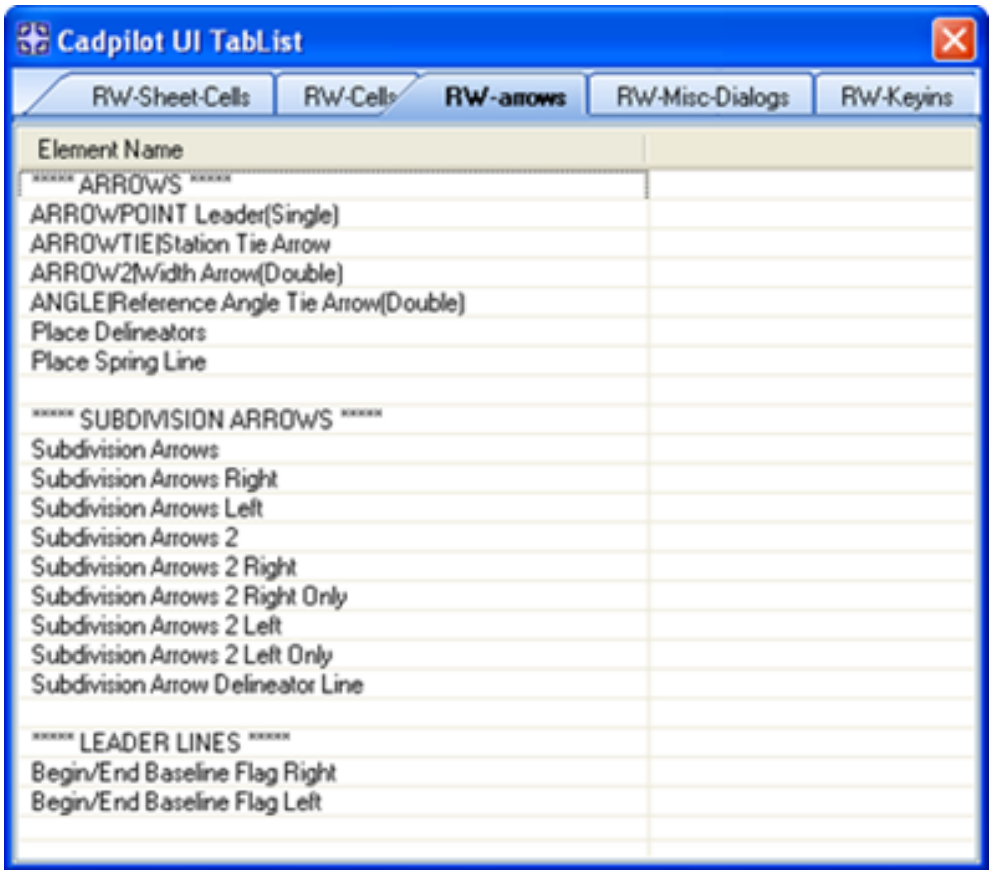
The RW-Cells TabList provides quick access to RW Mapping cells for placement into a MicroStation design file. Simply select the desired cell name and double click. The cell placement command will execute and the cell will be attached to the MicroStation cursor for placement. The **Place Active Scale** dialog (also shown) will be activated for adjustment of scale prior to the data point to place the cell.





- RW-Arrows TabList

The RW-Arrows TabList provides access to all R/W Mapping Arrows, Delineators and other annotation applications as located on the R/W Mapping FDOT Menu.



- RW-Misc-Dialogs TabList

The RW-Misc-Dialogs TabList provides quick access to various MicroStation command dialogs.

 © 2015 FDOT

- RW-Keyins TabList

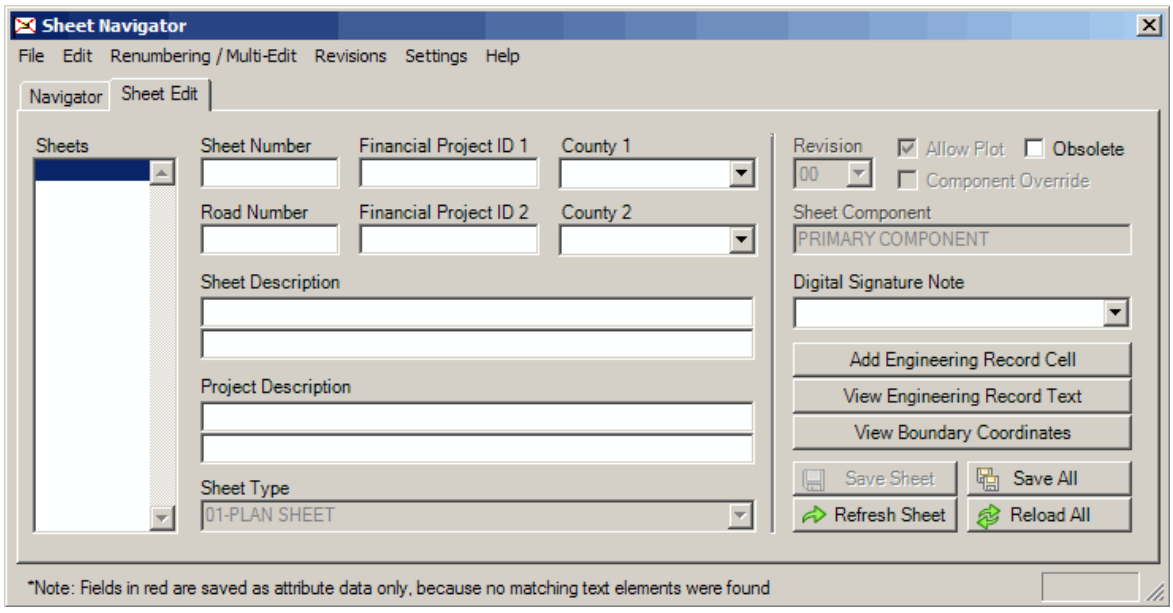
Provides quick list of common MicroStation Keyin commands

OPEN BROWSER

Clicking the **Open Browser** command button opens an Internet Explorer window with the last known website opened by the user. This is commonly used in conjunction with the FDOT Menu Help files and the FDOT Cell Web Pages, as well as, any other menu option that ties into utilizing websites. This command button will "remember" the user's last selection and open directly to that location.

LABEL SHEETS (SHEET NAVIGATOR)

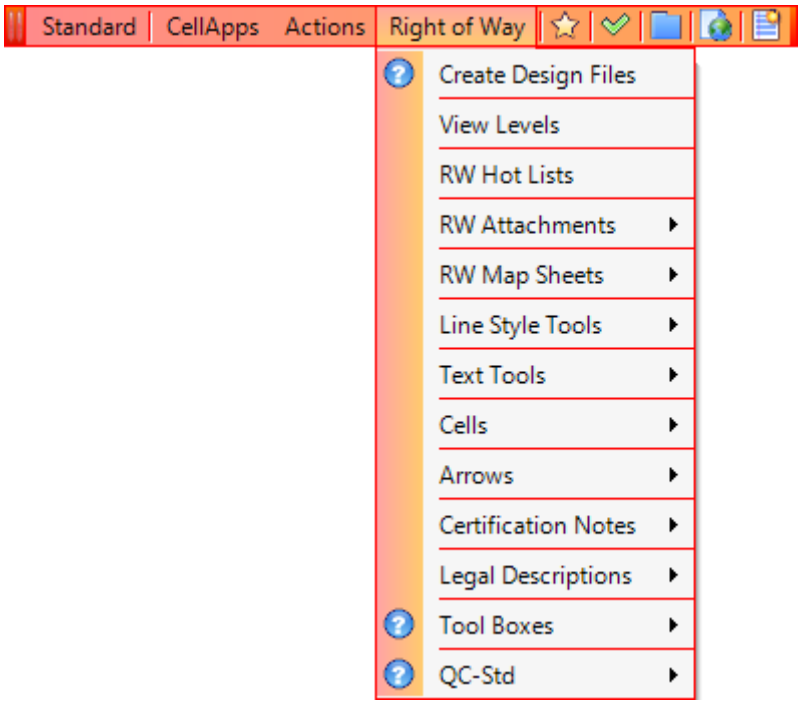
Clicking the **Label Sheets (**Sheet Navigator**)** command button opens the sheet labeling software called Sheet Navigator. This tool can also be accessed through the FDOT Menu option: **Actions > Label Sheets (**Sheet Navigator**)**



 © 2015 FDOT

RIGHT OF WAY FDOT MENU

FDOT Menu in the Right of Way configuration has a variety of menus.

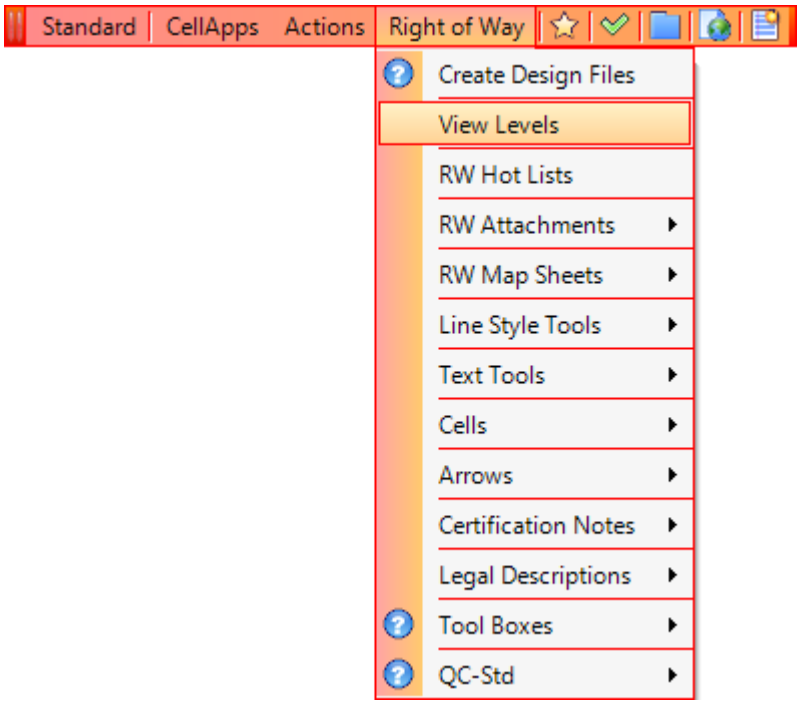


- **Create Design Files** – Opens the Create File/Project tool.
- **View Levels** – Opens the View Levels macro.
- **RW Hot Lists** – Displays the FDOT Menu Right of Way Mapping Hot List.
- **RW Attachments** – Contains tools for displaying and attaching cell libraries.
- **RW Map Sheets** – Contains tools for choosing and placing Right-of-Way sheet cells.
- **Line Style Tools** – Contains tools for choosing, setting, and placing Right-of-Way line styles.
- **Text Tools** – Contains tools for choosing, setting, and placing Right-of-Way text.
- **Cells** – Contains tools for choosing, setting, and placing Right-of-Way cells.
- **Arrows** – Contains tools for choosing, setting, and placing Right-of-Way arrows.
- **Certification Notes** – Contains tools for placing Right-of-Way Certification Notes.
- **Legal Descriptions** – Contains links to the GEOPAK and RW Legal Description tools.
- **Tool Boxes** – Contains links to a variety of Right-of-Way toolboxes for MicroStation.
- **QC-Std** – Contains links to a variety of Right-of-Way Quality Control tools.

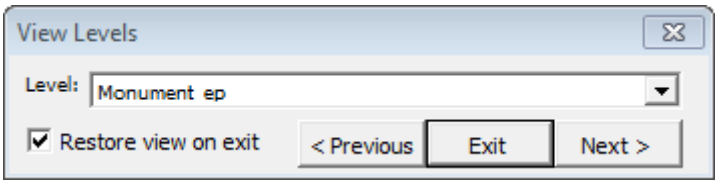
Note Most of the FDOT Menu Right of Way pull-downs will be covered in separate dedicated chapters.

 © 2015 FDOT

VIEW LEVELS



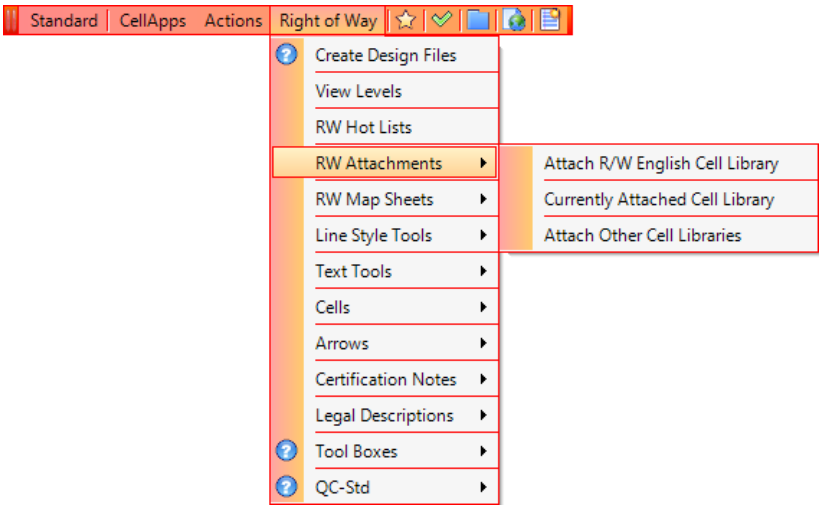
This is a VBA macro that displays used levels individually in a slide-show type of manner. If you tend to crawl up and down your levels a lot, you may find this much faster than traditional methods.



- *Levels* Displays a list of level names that currently exist in the design file.
- *Restore View on Exit* When selected (on) all levels in list will be displayed when macro is exited. When not selected (off) the current active will be the only level displayed when the macro is exited.
- *Previous* Moves to the level previously selected in the list.
- *Next* Moves to the next level in the list.
- *Exit* Exits the program.

RW ATTACHMENTS

The **R/W Attachments** selection provides options for attaching the Right of Way Mapping cell libraries for English (row.cel) projects, determining the "Currently Attached Cell Library" which displays results in the MicroStation message window, "Attach Other Cell Libraries" which displays the MicroStation Cell Utility dialog.



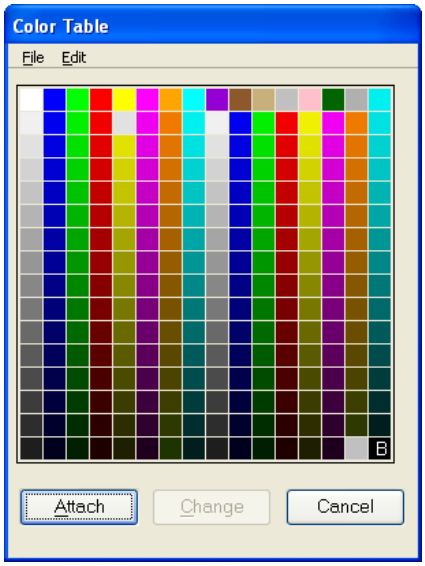
FDOT COLOR TABLE

MicroStation uses a file called a **Color Table** to map color numbers in a design file to specific Red, Green, and Blue (RGB) values. This file is attached to MicroStation by selecting **Settings>Color Table** from the main MicroStation menu. By having all FDOT MicroStation users attach the same color table, FDOT can ensure consistency when viewing, editing, and plotting design files.

> ***Note*** Most FDOT Districts have set up MicroStation sessions to automatically attach the correct color table (FDOTCOLOR.TBL) upon startup. Steps #1 and #2 in the following procedure can be used to check that the correct color table is attached.

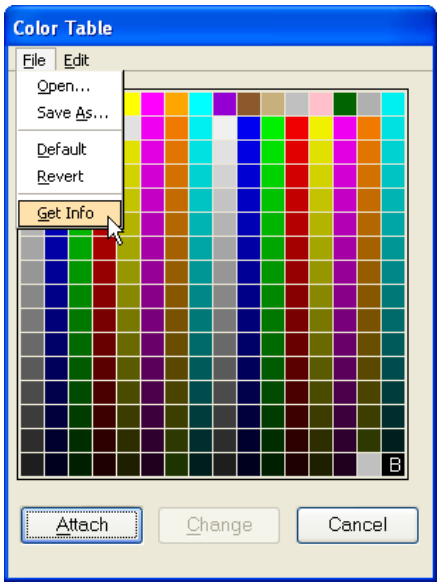
- To attach the correct FDOT Color Table (FDOTCOLOR.TBL) to MicroStation, follow the following steps:

    1. From the main MicroStation menu select **Settings > Color Table**.



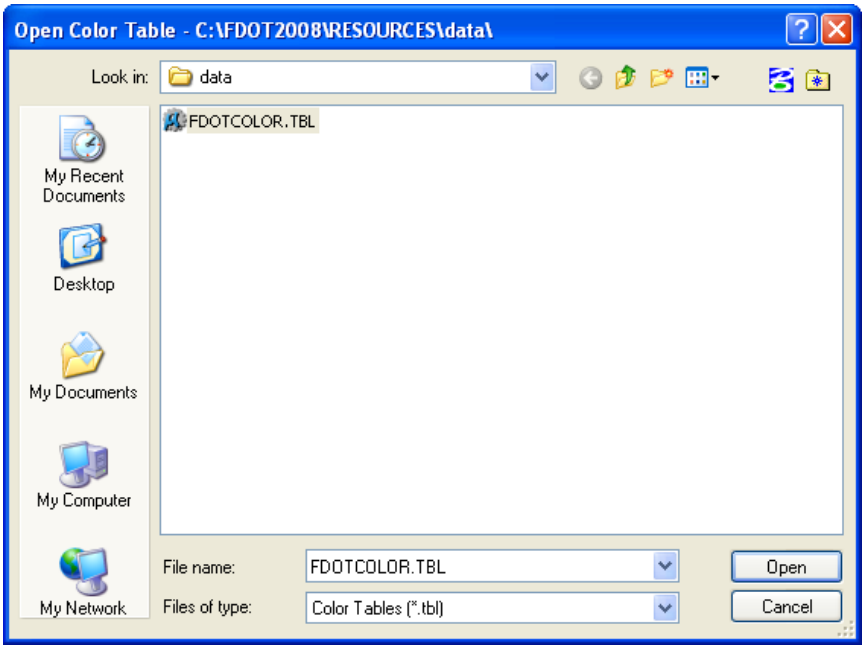
 © 2015 FDOT

2. The Color Table dialog displays. Select **File > Get Info** to check the source of the currently attached color table.

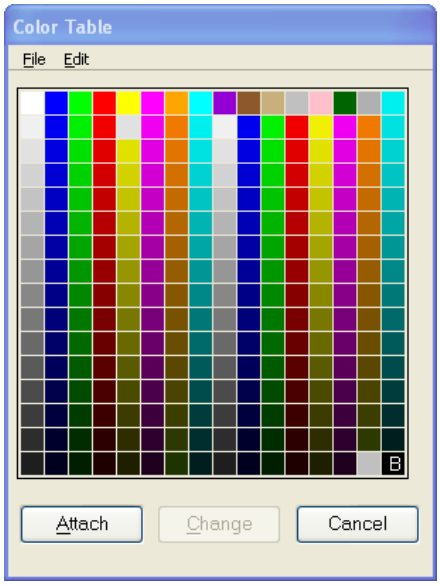


3. The Color Table Information dialog is displayed and shows the origination of the currently attached color table.

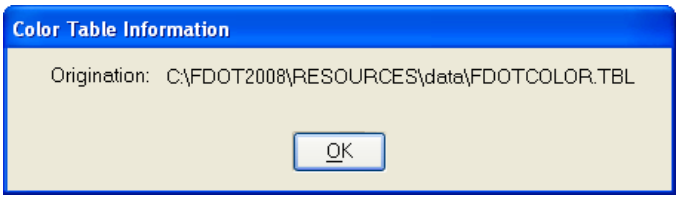
4. If the correct color table it not attached, select **File > Open** and browse to C:\FDOT2010\RESOURCES\data \and select the **FDOTCOLOR.TBL** file and click **OPEN**.



5. Click **Attach** to attach the color table just opened.



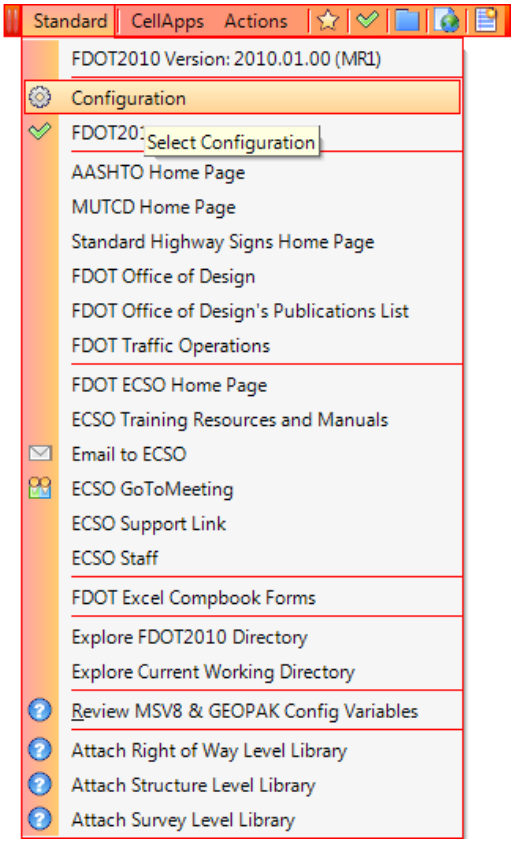
6. To verify that the FDOTCOLOR.TBL table is attached, select **Settings > Color Table** and then **File > Get Info** from the Color Table dialog.



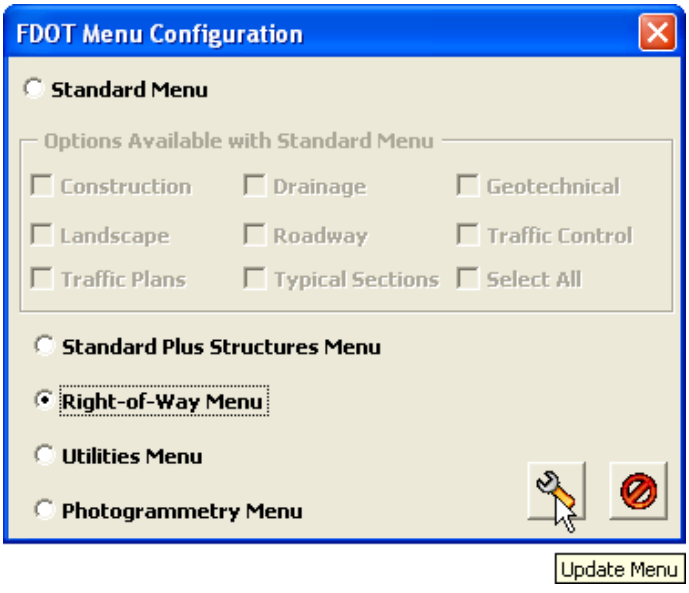
 © 2015 FDOT

Exercise 7.1 Procedure for Changing Discipline Menus

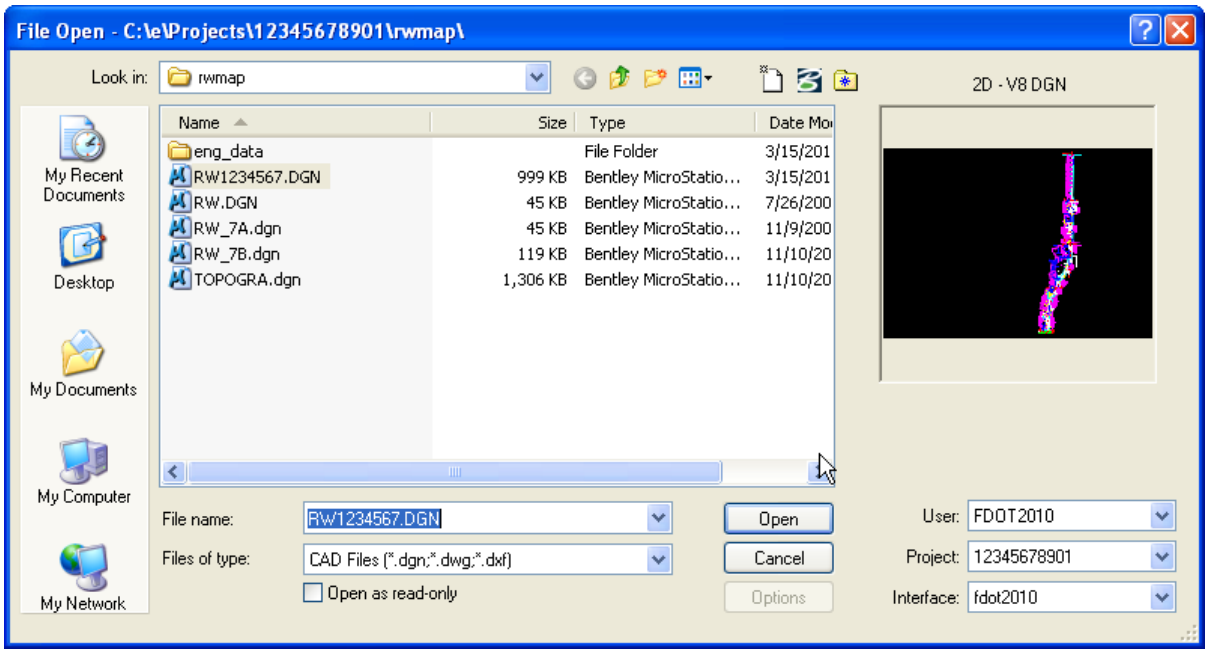
1. Select **Standard > FDOT Menu Configuration** from the far left of the Standard FDOT Menu.



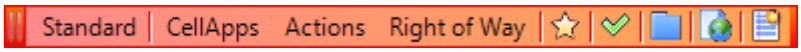
2. From the FDOT Menu Configuration dialog, click the option to load the standard **Right-of-Way Menu** and click the **Update Menu** button. This will tell FDOT Menu to restart with both the Standard and Right-of-Way Menus upon re-opening of the next MicroStation session. MicroStation will close and must be re-opened.



3. Select the DGN that you want opened and click **OPEN** when the MicroStation File Open dialog displays.



4. FDOT Menu will restart with both the Standard and the Right of Way Menus loaded. Take a moment to look at the different pull down menus and commands on the FDOT Menu.

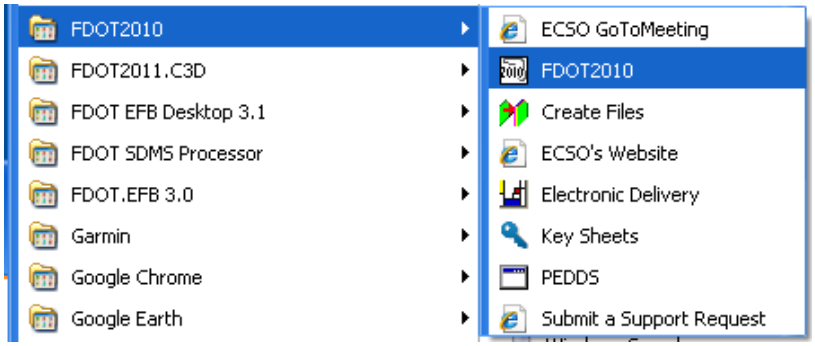


5. **Exit** MicroStation

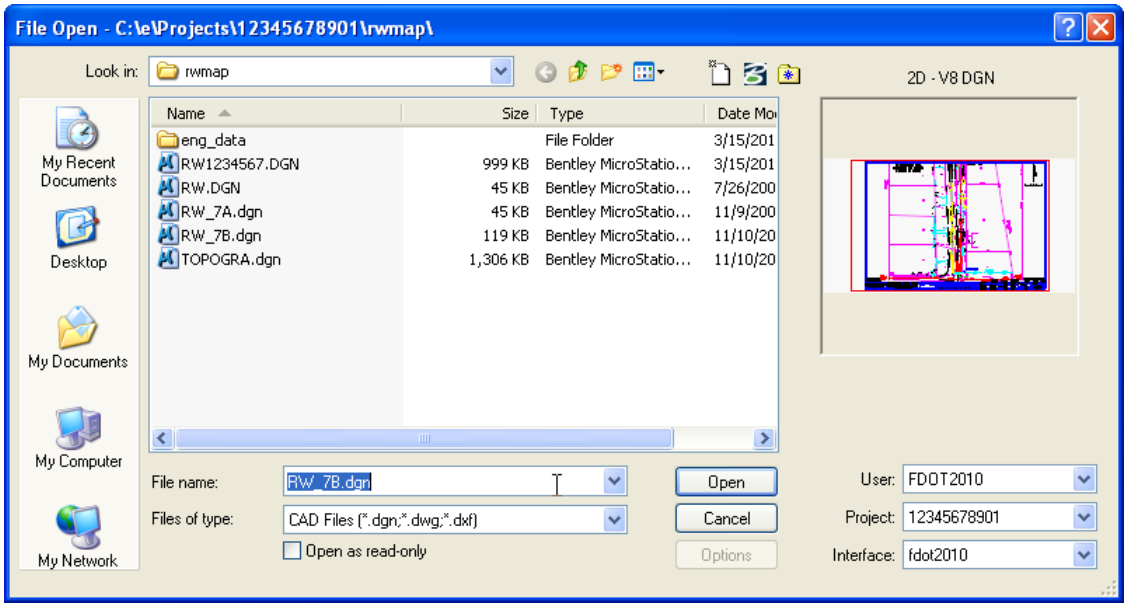
Exercise 7.2 FDOT Menu QC Quick Command Button

➢ ***In this exercise the user will learn how to use the FDOT Menu QC Quick command button.***

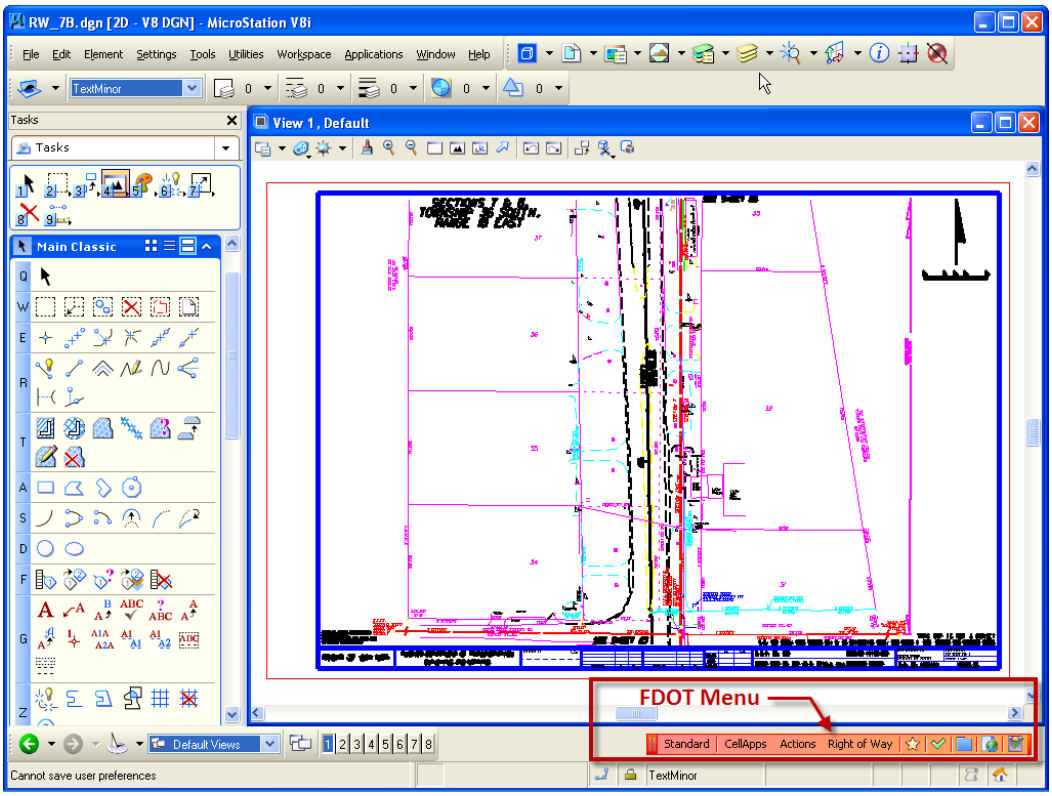
1. Open MicroStation using the FDOT2010 icon FDOT2010 on the Desktop. As an alternative, launch MicroStation from the FDOT2010 folder on the Windows Start menu.



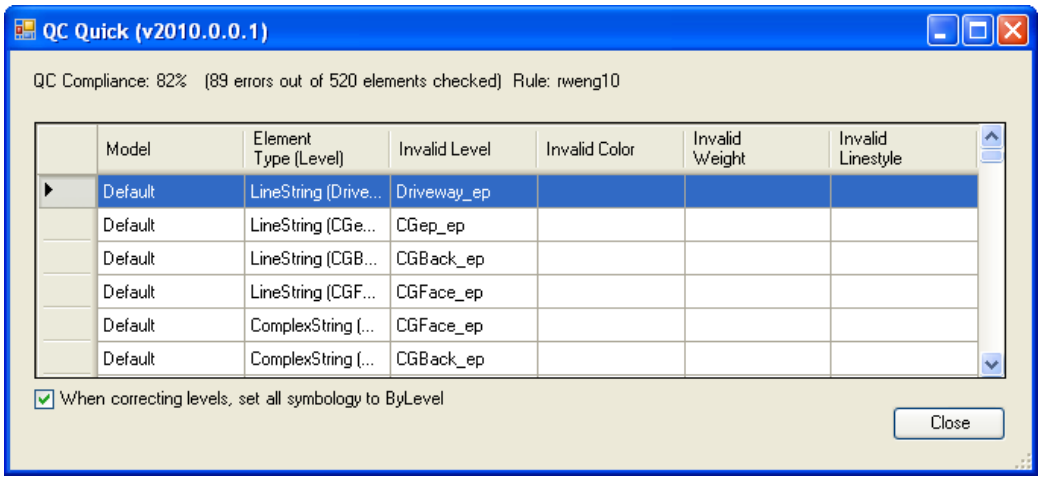
2. From the MicroStation File Open dialog, open the file C:\E\Projects\12345678901\rwmap*RW_7B.dgn*. This file will be used for running the Command Buttons from FDOT Menu for the exercise. Ensure that the correct *User*, *Project*, and *Interface* are chosen as shown.



3. FDOT Menu will start automatically after GEOPAK is initialized. The location of FDOT Menu and its associated Command Buttons should display in the locations saved in the exercise for Chapter 2



4. Once inside the MicroStation file, click the QC Quick command button . QC Quick will execute and check on all elements within all models of the *RW_7B.dgn* file against the FDOT CADD Standards and display the QC Quick dialog as shown below.



5. Details on using QC Quick as well as other Right-of-Way Quality Control tools will be covered in a later chapter. Click the "X" in the upper right corner of the QC Quick dialog to close it. Exit MicroStation.

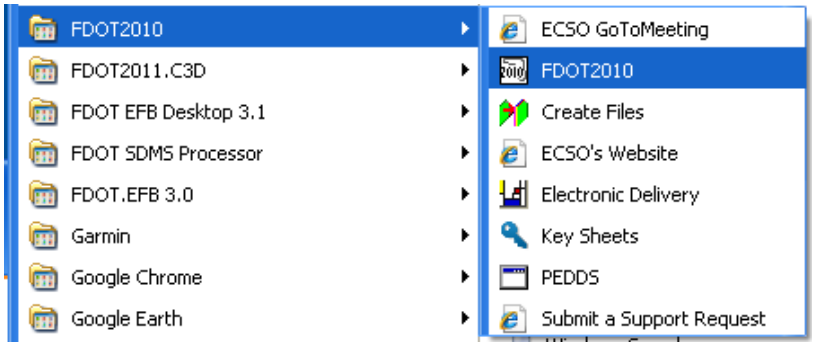
Note In the FDOT Workspace QuikChek will run automatically when closing or switching DGN files. This ensures that the user is provided with up-to-date compliance information.

 © 2015 FDOT

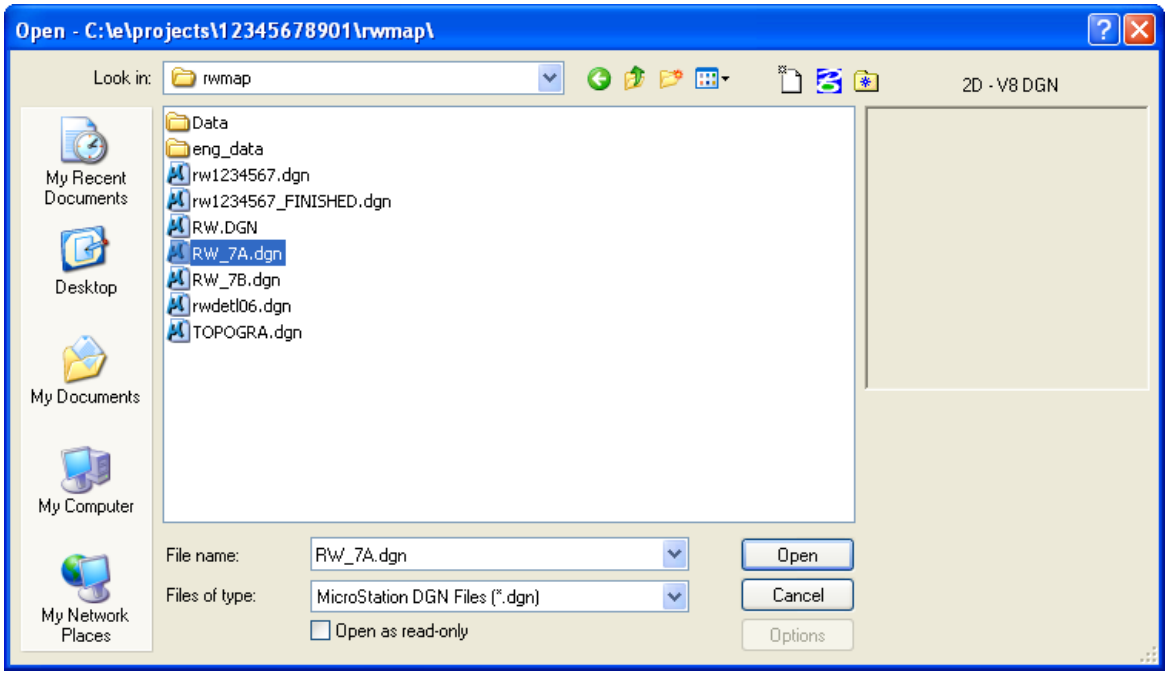
Exercise 7.3 FDOT Menu Hot List Hot Box

➢ ***In this exercise the user will learn how to use the FDOT Menu Set Plot Scale Command Button.***

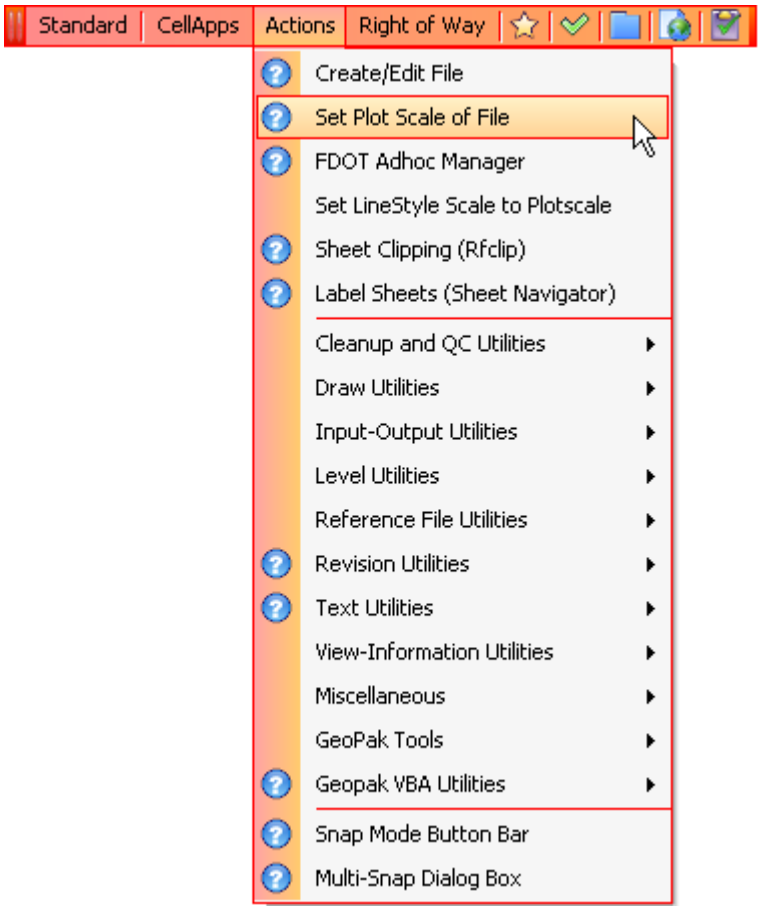
1. Open MicroStation using the FDOT2010 icon FDOT2010 on the Desktop. As an alternative, launch MicroStation from the FDOT2010 folder on the Windows Start menu.



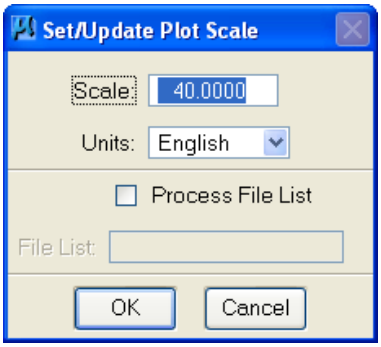
2. From the MicroStation **Open File** dialog, open the file C:\E\Projects\12345678901\rwmap*RW_7A.dgn*. This file will be used to experiment with the options in the **Command Buttons**. Ensure that the correct *User*, *Project*, and *Interface* are chosen as shown.



3. From FDOT Menu, select the **Set Plot Scale** button or select the menu option: **Actions > Set Plot Scale of File**. The TabList tools will use this scale when placing any elements in the Right-of-Map.

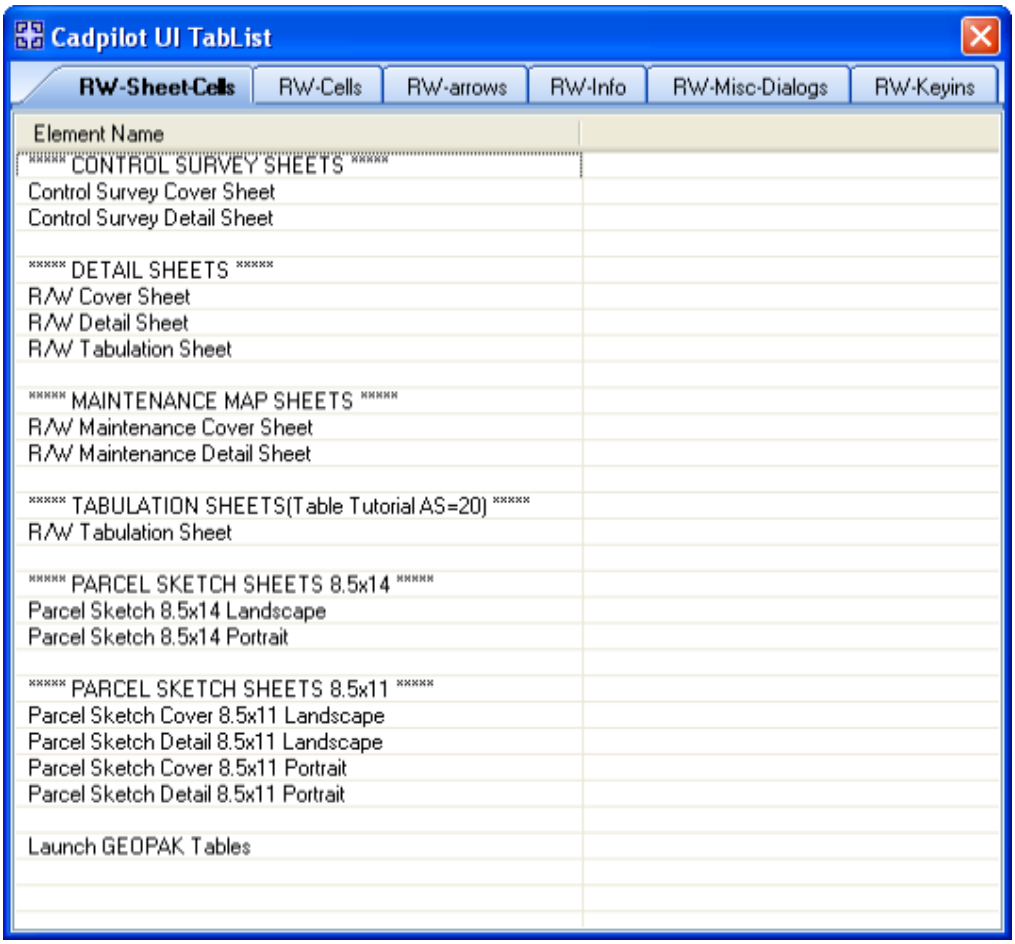


4. Set the *Plot Scale* to **40.000**, the *Units* to **English** and click **OK**.



 © 2015 FDOT

5. Click the **TabList** command button to open the RW TabLists dialog.



6. Use the **RW-Cells** and **RW-Sheet Cells** tabs to place various elements into the **RW.dgn** file. Do not be concerned about cleaning up items as this file will not be used in future exercises.

Note The RW-Cells, RW-Sheet Cells, and RW-Arrows tabs are essentially equivalent to the pull-down menus Right of Way > Cells, Right of Way > RW Map Sheets, and Right of Way > Arrows from the FDOT Menu.

 © 2015 FDOT

8 RIGHT OF WAY LINE STYLE TOOLS

OBJECTIVES

This chapter will review the RW Line Style tools from MicroStation and Right of Way FDOT Menu:

- Standard MicroStation Lines
    - Line Styles
    - Line Weights
- RW Custom Line Styles
- Set Custom Line Style Scale
    - Right of Way FDOT Menu Method
- Setting ByLevel Line Style Symbology
    - Right of Way FDOT Menu Method
    - MicroStation XM Methods
    - ✓ Active Level Pull-Down Method
    - ✓ Level Manager Method
    - ✓ Active Filter Pull-Down Method
- Modify Custom Line Styles
    - Right of Way FDOT Menu Tools
    - ✓ Shift Custom Line Style
    - ✓ Scale Custom Line Style
    - ✓ Scale ALL Custom Line Styles
    - ✓ Set Custom Line Style Scale
    - MicroStation Tools
- Leader Lines, Tie Lines and Station/Offset Lines.

INTRODUCTION

In order to properly represent the large variety of roadway, subdivision, right-of-way and other field located and calculated lines shown on FDOT Right-of-Way maps, many custom line styles have been created for use by FDOT Menu and MicroStation.

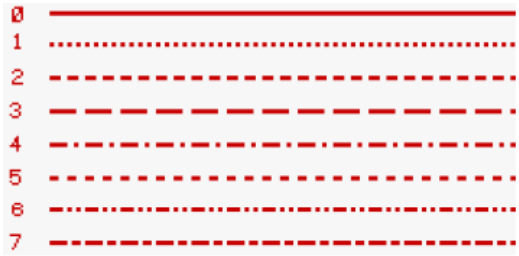
MicroStation and FDOT Menu enable the Right-of-Way Mapper to easily select and place Right-of-Way Custom Line Styles into a MicroStation design file.

This chapter will concentrate on custom line style scaling, choice, placement, and modification. Methods for scaling, choosing, placing, and modifying Right-of-Way Custom Line Styles will be covered as for the FDOT Right-of-Way Mapper.

STANDARD MICROSTATION LINES

LINE STYLES

A line style is part of the symbology of an element, for example, whether a line is solid, continuous dashes, dots and dashes, and so on. In plotting, a line style is an index in the range 0 to 7 that designates a particular sequence of pen up/down pairs to be used when drawing or plotting a graphic element. Each element has its own line style. Next is a graphic of the standard MicroStation line styles.



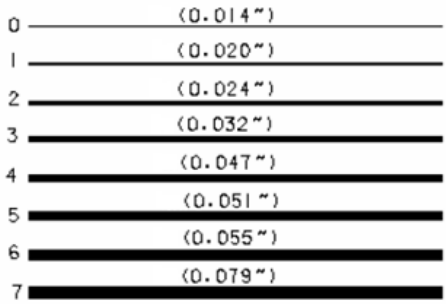
LINE WEIGHTS

Recommended line thickness on plots for Right of Way Mapping graphic elements when plotted via pen plotters, Laser, Electrostatic, or Ink Jet plotters should be displayed within the standard line thickness for "RAPIDOGRAPHIC" pen sizes. The following table gives the relationship between MicroStation's line weight index and the required plotted line thickness in Millimeters and Inches.

LINE WEIGHT	THICKNESS
0	0.014"
1	0.020"
2	0.024"
3	0.032"
4	0.047"
5	0.051"
6	0.055"
7	0.079"

Note "Thickness on plot" corresponds to the line thickness on plots at any scale and to the pen sizes of a pen plotter. **EXCEPTION**: A line placed with a weight factor is stored as part of a cell. When the cell is placed at a scale factor other than one (1), the plotted line thickness will be proportional to the scale at which the cell was placed.

The following chart displays the comparative "RAPIDOGRAPHIC" pen weights and their corresponding MicroStation index weight number:



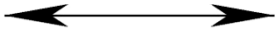
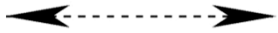
 © 2015 FDOT

RW CUSTOM LINE STYLES

It is not possible to represent every type of line that Right-of-Way Mappers need to use with only the standard MicroStation line styles. That is one of the reasons that MicroStation provides for the creation of Custom Line Styles. Custom Line Styles have the same characteristics as standard MicroStation line codes and can be set as the active line style using the "LC=" key in.

For English units, "**RWLINENG.RSC**" contains all of the RW Custom Line Styles at a 1:1 scale. Standard MicroStation line styles are based on output device coordinates, and therefore are not truly What You See Is What You Get (WYSIWYG). However, custom line styles are WYSIWYG and therefore display much the same on screen as they do on printed hard copy. For this reason, it is recommended that Right-of-Way Mappers use custom line styles instead of standard line styles with patterned lines. A listing of the FDOT Custom Line Styles for Right-of-Way Mappers displays on the next few pages.

With the use of ByLevel Symbology in MicroStation XM, the primary concern for the FDOT Right-of-Way Mapper should be that all elements are on the correct level in the DGN file. This is because ByLevel Symbology ensures that all elements placed on a particular Level have the Color, Style, and Line Weight as defined by the ByLevel in the MicroStation Level Library. In other words, if the element is on the correct Level, the symbology will be correct for that element. The best way to ensure this is to use the **Right of Way FDOT Menu** whenever possible when placing elements.

NAME	SYMBOL
ANGLE – Angle Delineator	
ARROW2 – R/W Width	
ARROWPOINT	
ARROWTIE	
CLIMIT - City Limit	
CLIMIT2 – City Limit(Hash Only)	
COLINE – County Line	
EECL – Existing Easement Centerline	
EXLA – Existing L/A RW	
EXRW – Existing State Road R/W	
GRTL - Grant Line	
LA - Proposed L/A RW	

© 2015 FDOT

NAME	SYMBOL
LEADERLT – Leader Left	
LEADERRT – Leader Right	
LICENSE – License	
LOC - Limits of Construction	
NONVH - Non-Vehicular Access Line	
NSPF - Nat./State Park/Forest	
NSPF2 – Nat./State Park/Forest (Hash Only)	
PESMT - Perpetual Ease.	
QSEC - ¼ Section Line	
RR - Railroad	
SECLIN - Section Line	
STL - State Line	
SUBDIV – Subdivision Arrow	
SUBDIV2 – Arrows2	
SUBDIV2LT – Arrows 2 LT.	
SUBDIV2LTOnly – Arrows 2 LT.	
SUBDIV2RT – Arrows 2 RT.	
SUBDIV2RTOnly – Arrows 2 RT. Only	
SUBDIVLT	
SUBDIVRT	

© 2015 FDOT

NAME	SYMBOL
TEMPE – Temporary Easement	
TIITF – Murphy Reservation Line	
TWPRGE – Township/Range	
WaterMapBoundary	

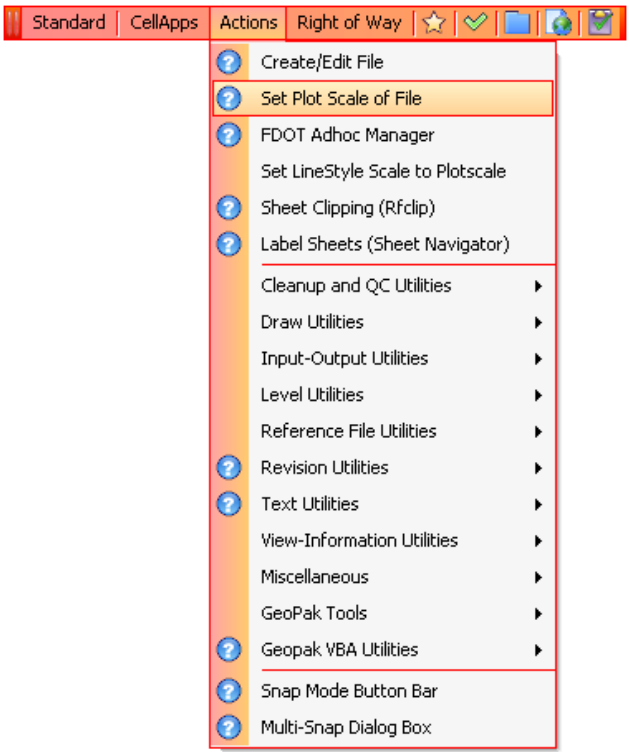
SET CUSTOM LINE STYLE SCALE

In order to achieve the correct display for custom line styles in a Right-of-Way map file, the user will want to set the custom line style scale to match the intended Plot Scale of the DGN file. The user can perform this function from either the Right of Way FDOT Menu or from native MicroStation commands. The Right of Way FDOT Menu methods as well as both MicroStation methods will produce the same result. Which method to use is left up to the individual Right-of-Way Mapper.

FDOT MENU METHOD

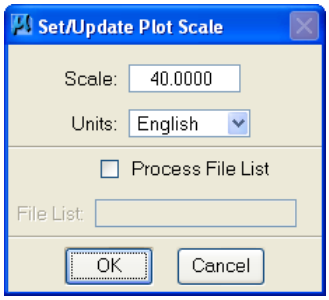
If the Plot Scale for a DGN file is not set, setting the correct custom line style scale from the Right of Way FDOT Menu is a two step process. The steps below are for the entire process. If the Plot Scale is already set for the DGN file, the user can go directly to Step #3.

1. Set the Plot Scale of the currently open DGN file by selecting the command botton or selecting the menu option: **Actions > Set Plot Scale of File**.



 © 2015 FDOT

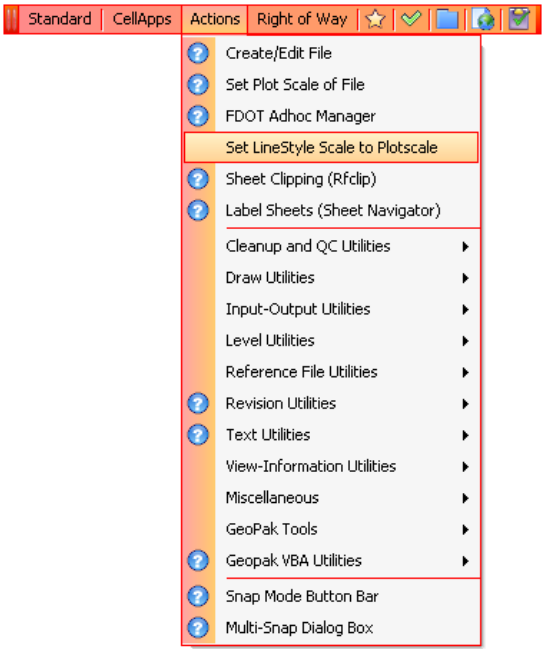
2. From the Set/Update Plot Scale dialog, the user will select the correct *Scale* and *Units* for the DGN file and then click **OK**.



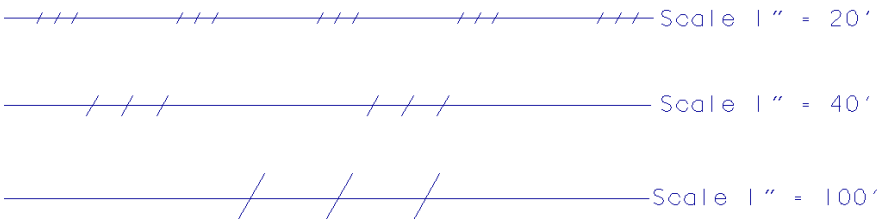
Note Populating the Process File List check box allows users to set the plot scale for all models in a single or multiple design files. To process all models in a single design file, type in the name of the design file in the File List text field. Use wild cards to process all models in multiple design files.

For example: type rwdetl*.dgn in the File List text field, to process all RW Detail Sheets in the working directory. Likewise, type *.dgn, to process all design files in the working directory. Once the File List is specified, click OK to process the design file(s).

3. From the Right of Way FDOT Menu, select **Actions > Set LineStyle Scale to Plotscale**. This will set the custom line style scale for all custom line styles to the Plot Scale of the current DGN file.



4. Regardless of the method used to set the Custom Line Style Scale, the resulting size of the Custom Line Styles should be the same provided that the Custom Line Style Scale and the Plot Scale of the DGN file match. Next are examples of the Right-of-Way Custom Line Style **LA_Line_Exist** which is used to show existing Limited Access lines.



 © 2015 FDOT

SETTING BYLEVEL LINE STYLE SYMBOLOGY

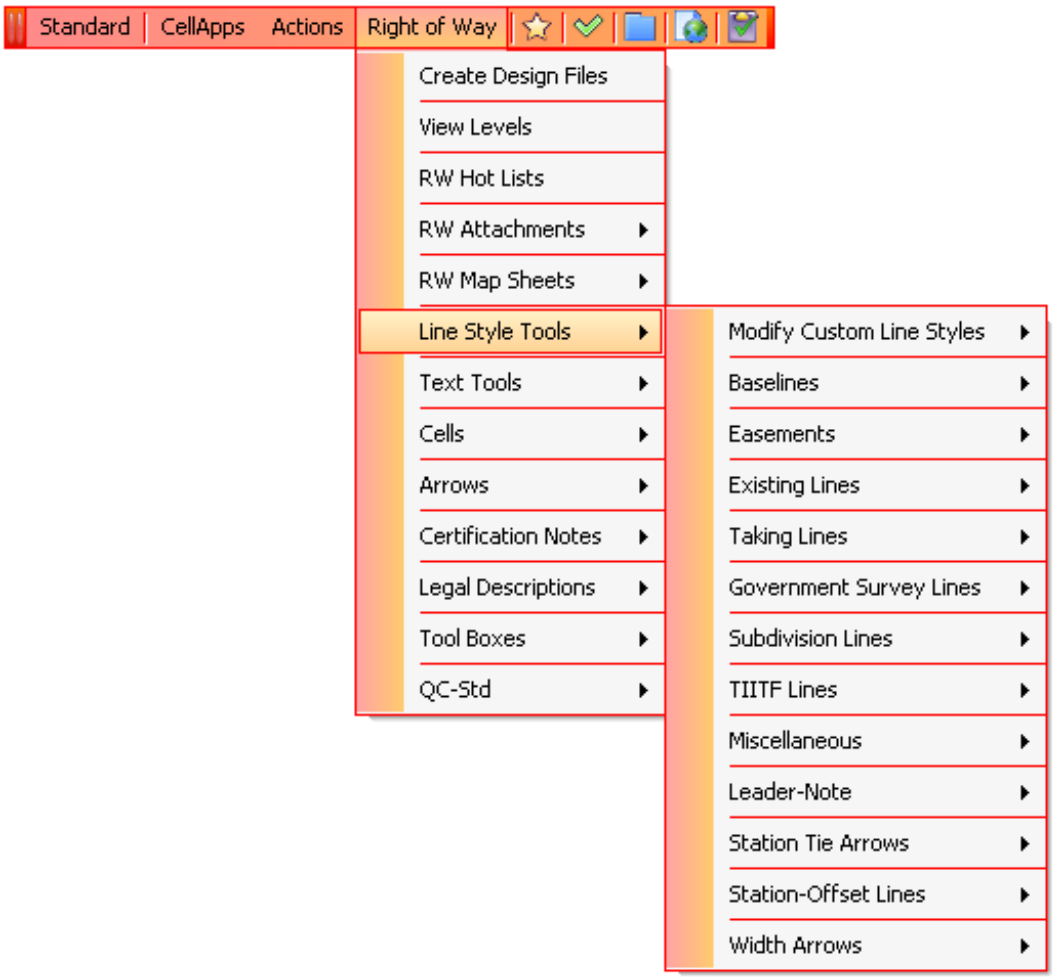
In order to achieve the correct display for Right-of-Way maps, the user will want to set the custom line style scale to match the intended item to be represented in the DGN file. The user can perform this function from either the Right of Way FDOT Menu or from four native MicroStation commands. The Right of Way FDOT Menu method and the four MicroStation methods will produce the same result. However, the Right of Way FDOT Menu method is preferred for the FDOT Right-of-Way Mapper as FDOT Menu will require fewer steps to ensure that the correct FDOT CADD symbology is met.

RIGHT OF WAY FDOT MENU METHOD

There are multiple ways to select a Right-of-Way Custom Line Style in the FDOT2008 workspace, a Right of Way FDOT Menu method and three MicroStation methods. The preferred way is from the Right of Way FDOT Menu.

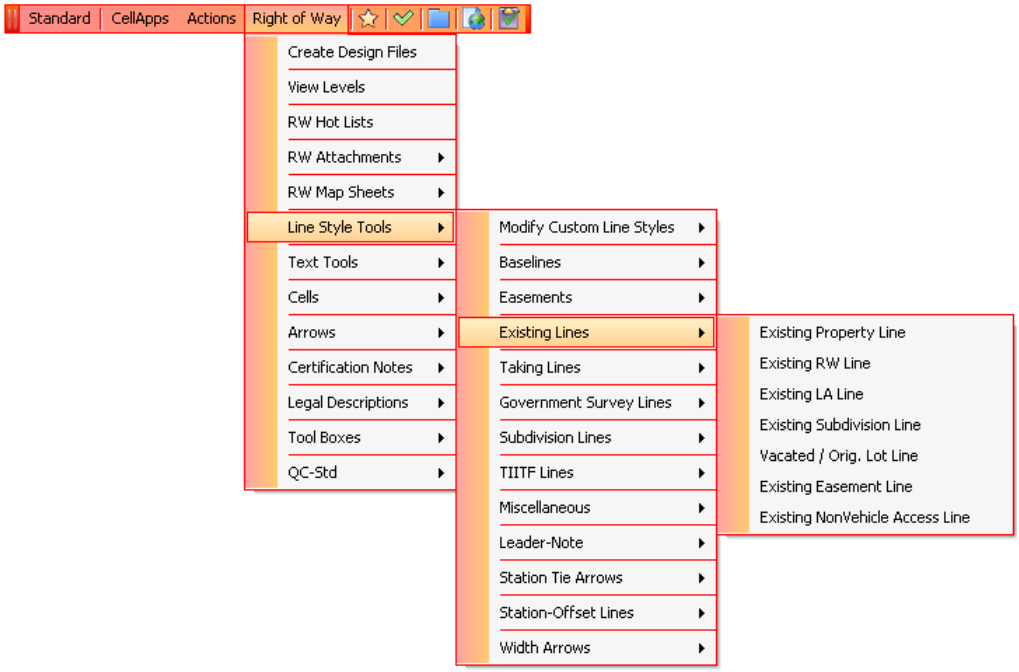
The steps to select a Custom Line Style from Right of Way FDOT Menu are shown next:

1. From the FDOT Menu, select **Right of Way > Line Style Tools**.

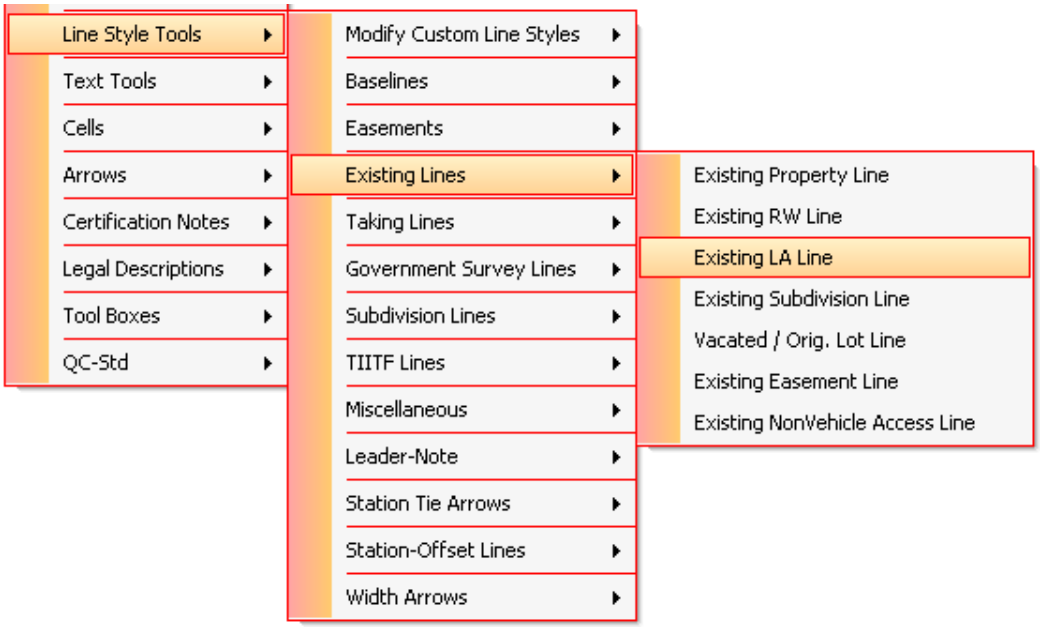


 © 2015 FDOT

2. Select the category of Custom Line Style to place. In the following example, the *Category* is **Existing Lines**.



3. Select the particular type of *Existing Lines* Custom Line Style to be placed into the Right-of-Way map. In this example, the type of *Existing Lines* Custom Line Style is **Existing L/A Line**.



MICROSTATION METHODS

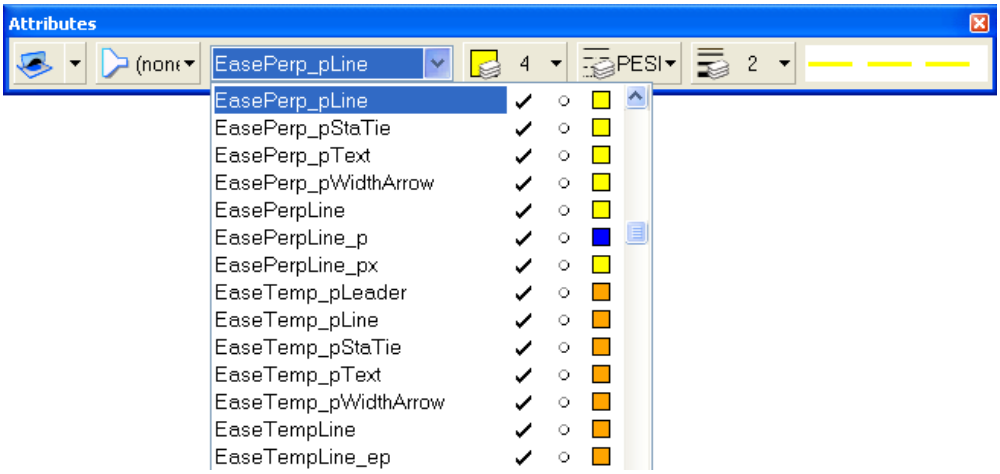
There are three ways to select a Right-of-Way Custom Line Style in the FDOT workspace using native MicroStation commands. None of these are the preferred method for choosing a Right-of-Way Custom Line Style, although if used carefully, these methods are as effective as the FDOT Menu method. Steps for all three native MicroStation methods are outlined next.

ACTIVE LEVEL PULL-DOWN METHOD

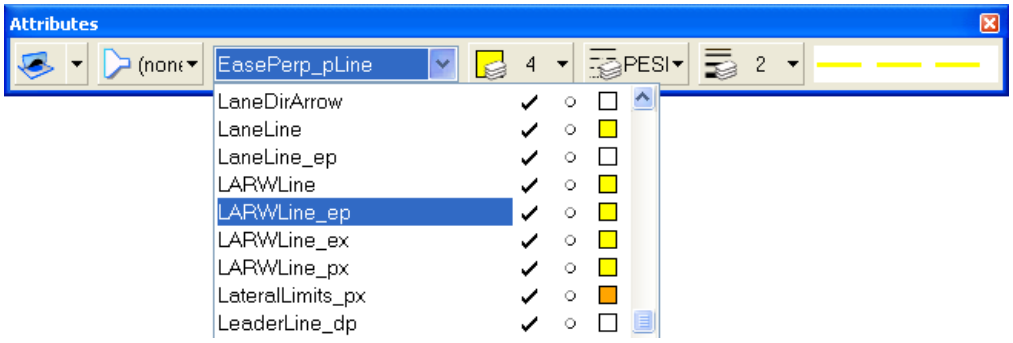
The user can use the Attribute toolbar to define what Line Style will be used for the active element. If the **Attributes** toolbar is not visible, the user can select **Tools** > **Attributes** from the main MicroStation menu. Since MicroStation XM allows the setting of ByLevel Symbology which defines the Color, Line Style (including Custom), and Line Weight for a Level, the Right-of-Way Mapper need only select the proper Level to meet FDOT CADD standards.

The steps for choosing the correct Right-of-Way Level using the Active Level pull-down are shown next:

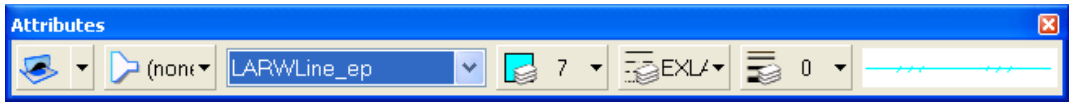
1. Select the **Active Level** pull-down from the MicroStation **Attributes** toolbar.



2. Select the **Level** on which the desired Right-of-Way Custom Line Style is to be placed.



3. The newly selected Level will be shown in MicroStation's *Attributes* toolbar and a preview of the Line Style (including Custom) will be shown on the right-hand side of the toolbox.



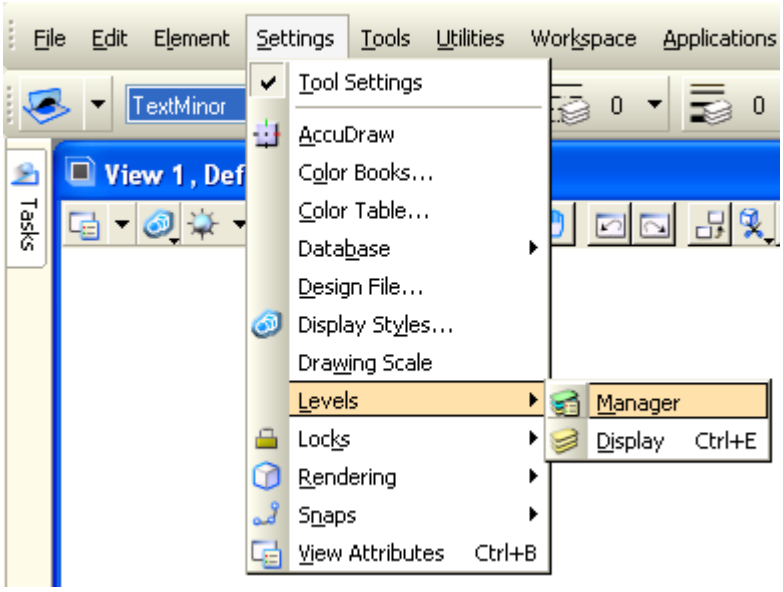
 © 2015 FDOT

LEVEL MANAGER METHOD

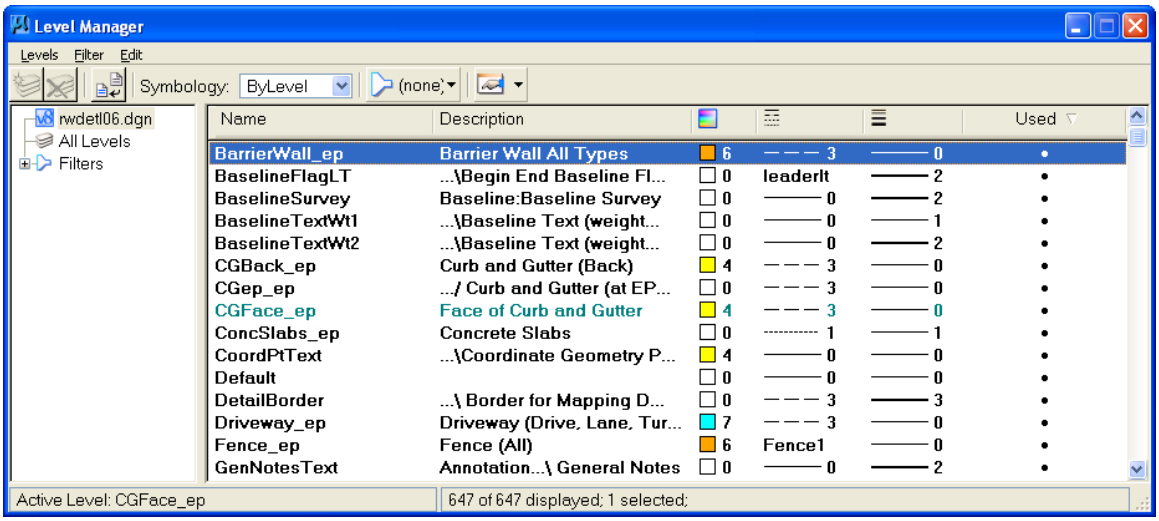
The Level Manager is another way to define a Right-of-Way Custom Line Style to be placed in the DGN file. In the FDOT2004 Workspace, the FDOT2004 configuration files automatically load the required DGNLIB file. The DGNLIB file contains definitions for all standard FDOT CADD Levels. Each Level uses ByLevel Symbology which further defines the Color, Line Style (including Custom), and Line Weight. Due to the ByLevel Symbology, the Right-of-Way Mapper need only select the proper Level to meet FDOT CADD standards.

The steps for choosing the correct Right-of-Way Level using the Level Manager are shown next:

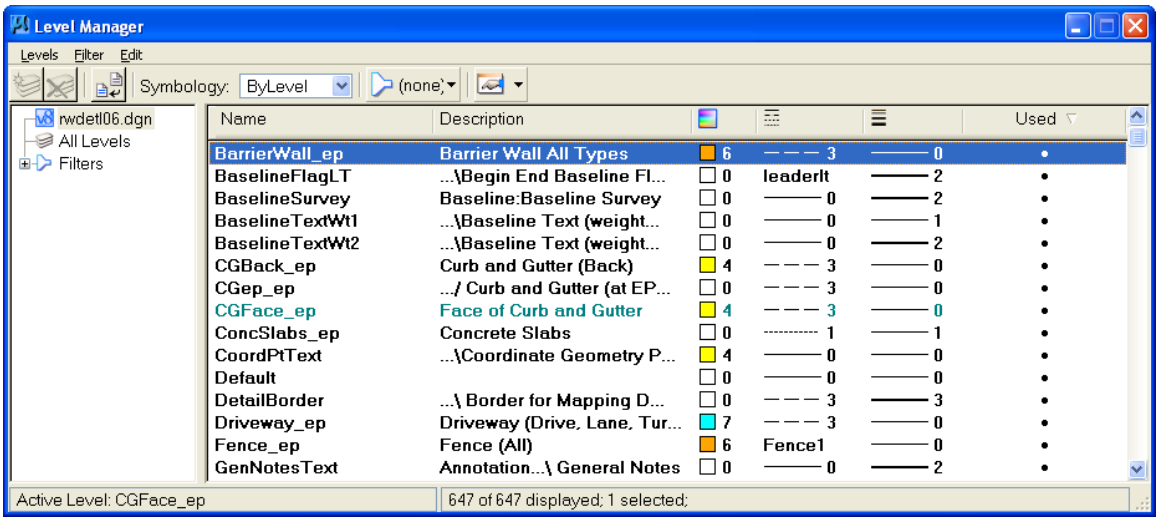
1. Select **Setting**s > **Level Manager** from the main MicroStation menu.



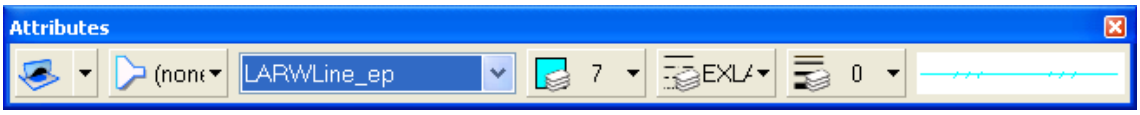
2. MicroStation's Level Manager dialog will open as shown.



3. To set the *Active Level* using the Level Manager dialog, double-click on the desired level in the list. In the next example, the *Active Level* has been set to **LA_LineExists**. The **[rwlevels]** text next to the Level Name indicates that the **LA_LineExists** *Level* is included in the Level Filter *rwlevels*. Filters are discussed in the next section.



The **Active Level** will be updated in the **Level Manager** and the **Attributes** toolbar.



Note If the user is unsure of the use of a particular Level, the **Description** column in the **Level Manager** will provide clarification as to each Level's use.

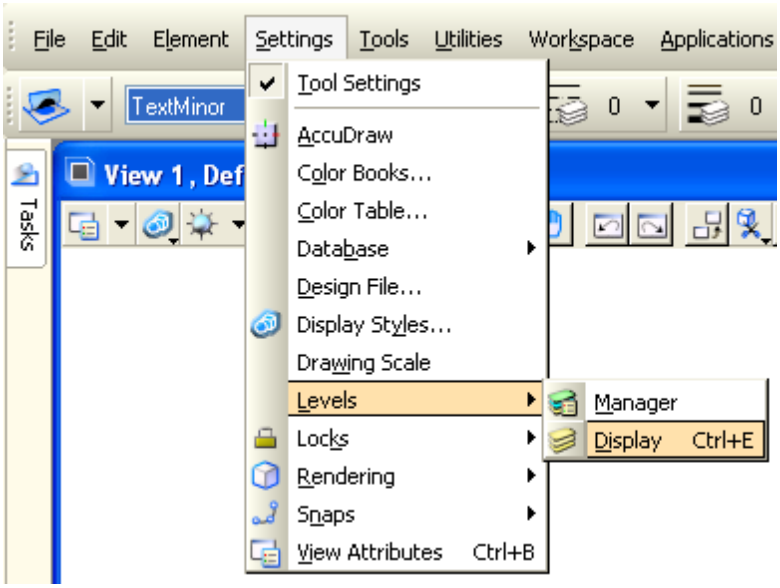
 © 2015 FDOT

ACTIVE FILTER PULL-DOWN METHOD

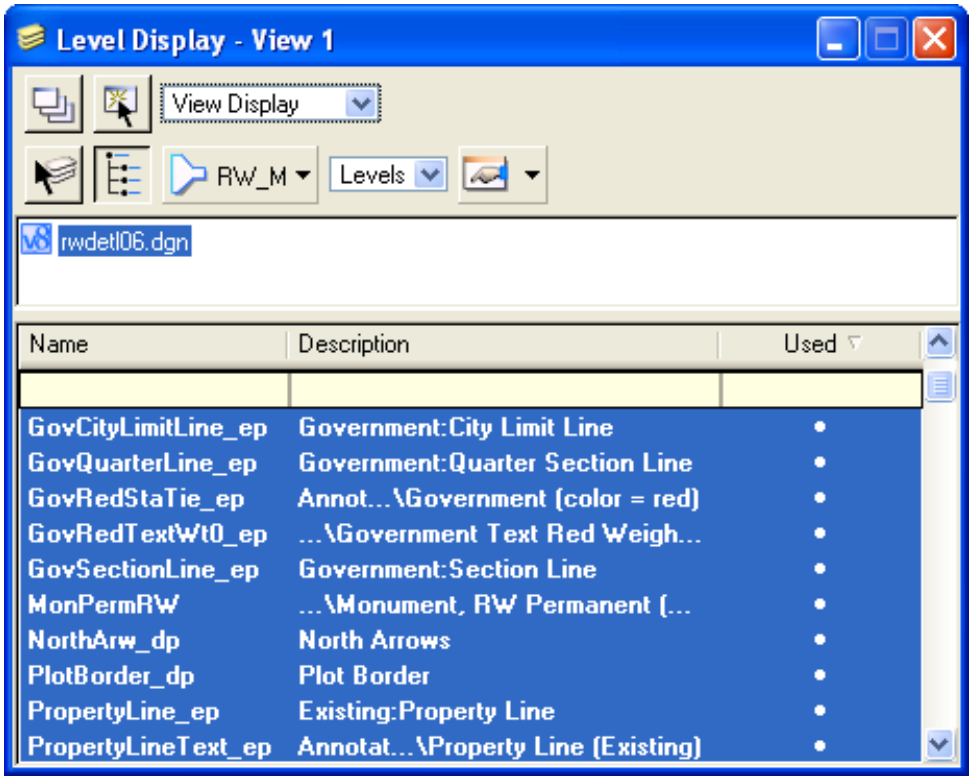
The Right-of-Way Mapper can also select Custom Line Style by setting the MicroStation Level from the **Level Display** dialog. Another function available in the **Level Display** dialog is the option to use the **Active Level Filter** to thin the display of the many levels defined by FDOT CADD standards.

The steps for choosing the correct Right-of-Way Level using the Level Display dialog are shown next:

1. Select **Settings > Level > Display** from the main MicroStation menu.

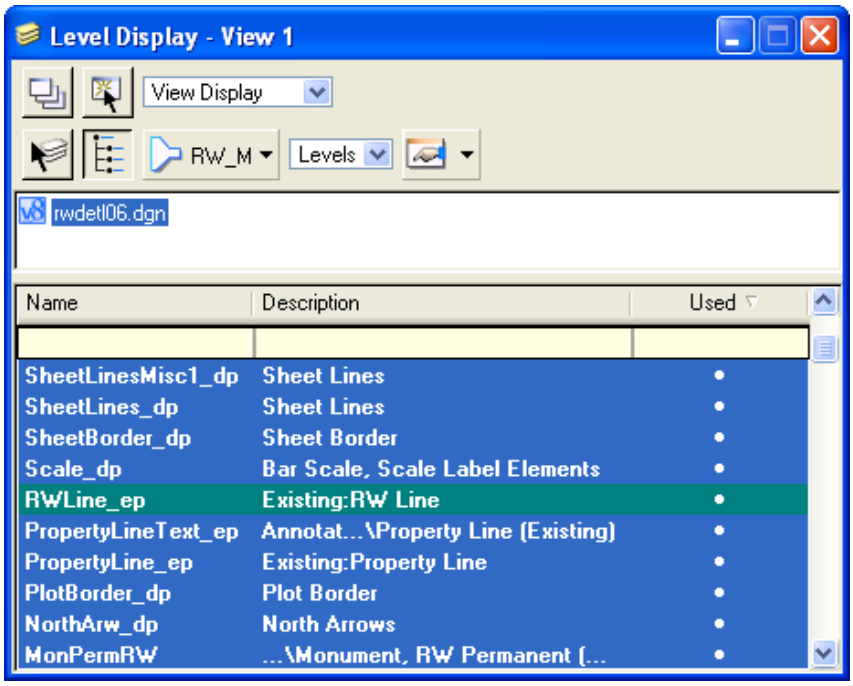


2. MicroStation's Level Manager dialog will open as shown.

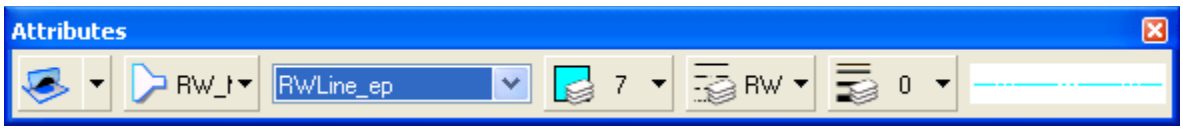


 © 2015 FDOT

3. To set the *Active Level* using the Level Display dialog, double-click on the desired level in the list. In the next example, the *Active Level* has been set to **LA_LineExists**.

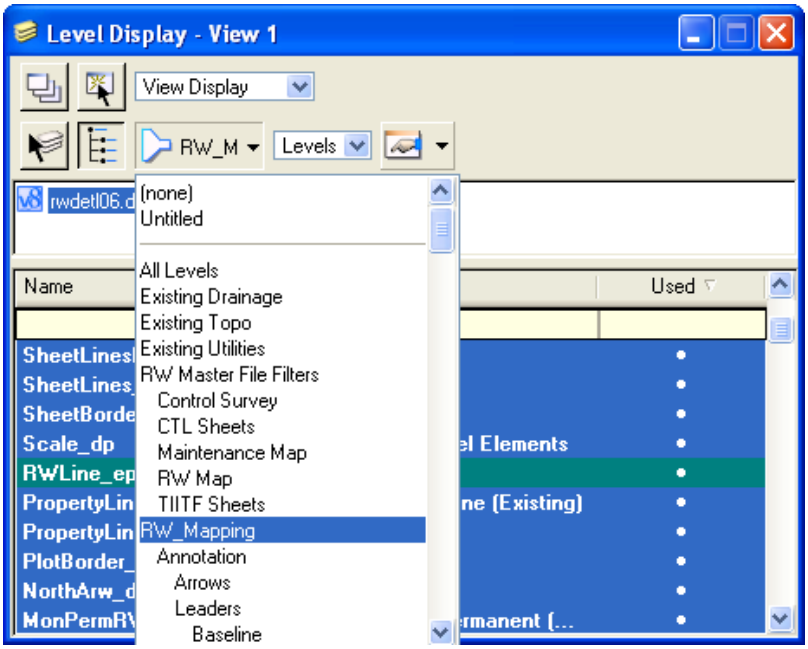


4. The *Active Level* will be updated in the Level Display dialog and the **Attributes** toolbar.



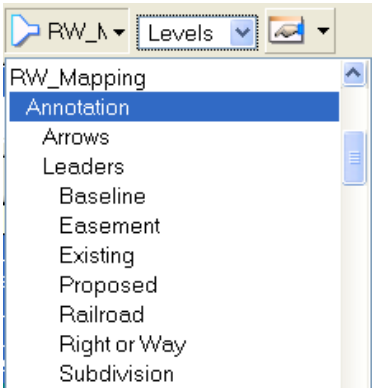
5. To thin the list of Levels displayed in the Level Display dialog, click the *List Filter*

icon and select the **RW_Mapping** filter as shown next.

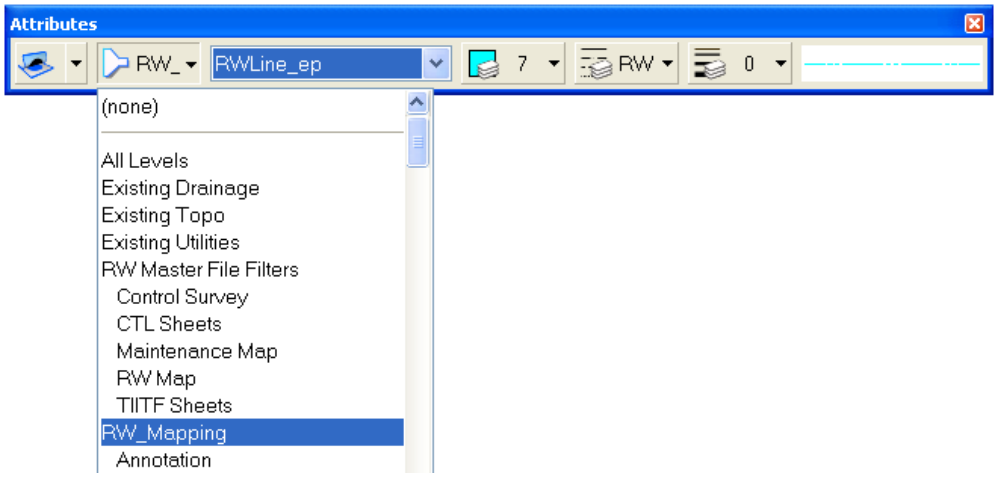


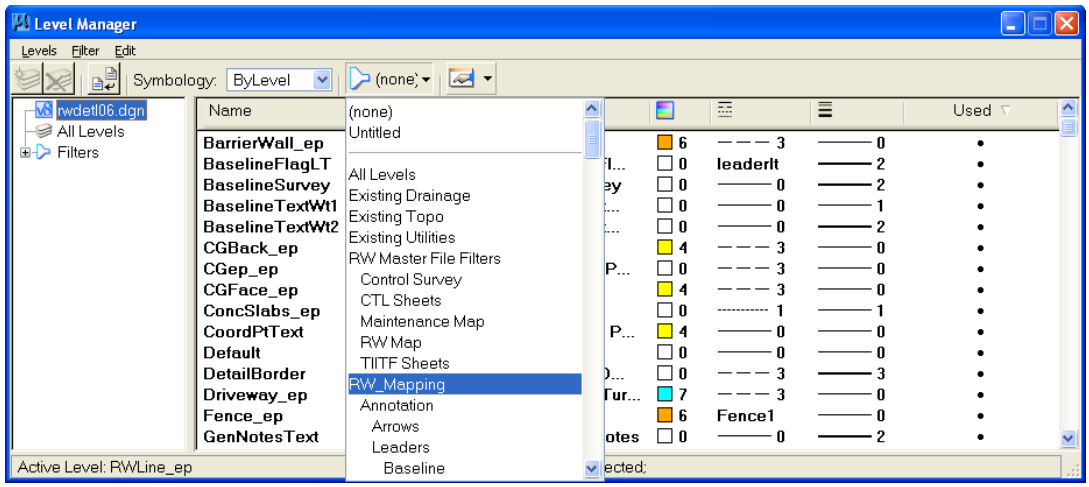
 © 2015 FDOT

6. The *List Filter* will display a more manageable level list. To further thin the list of displayed Levels, the user can choose a more refined **RW_Mapping** filter as shown. \



7. The *List Filter* is also available in the *Attributes* toolbar and the Level Manager dialog as shown.

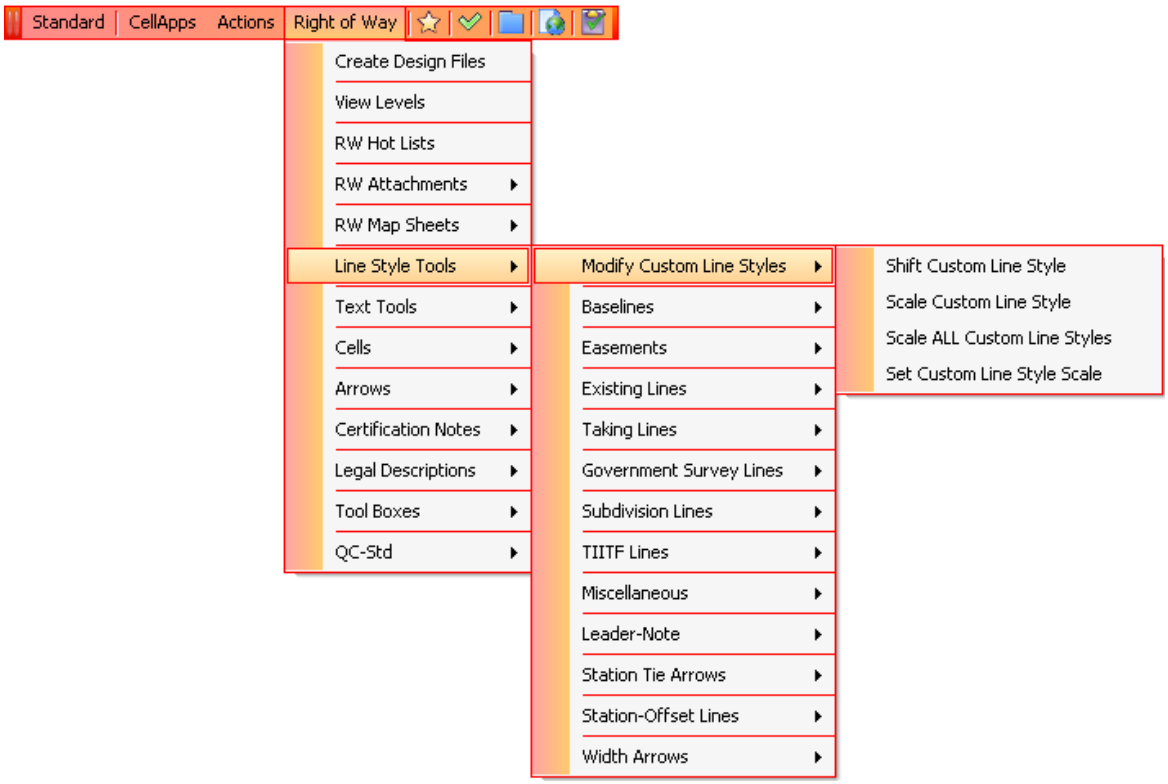




MODIFY CUSTOM LINE STYLES

For a variety of plotting and readability reasons, it is sometimes necessary to change the display and/or scale of Right-of-Way Custom Line Styles in a drawing. To assist the FDOT Right-of-Way Mapper with these functions, three tools have been created for the Right of Way FDOT Menu. An additional tool for scaling Custom Line Styles is available as a MicroStation Key-in command. All tools as well as the steps for using them are outlined next.

RIGHT OF WAY FDOT MENU TOOLS



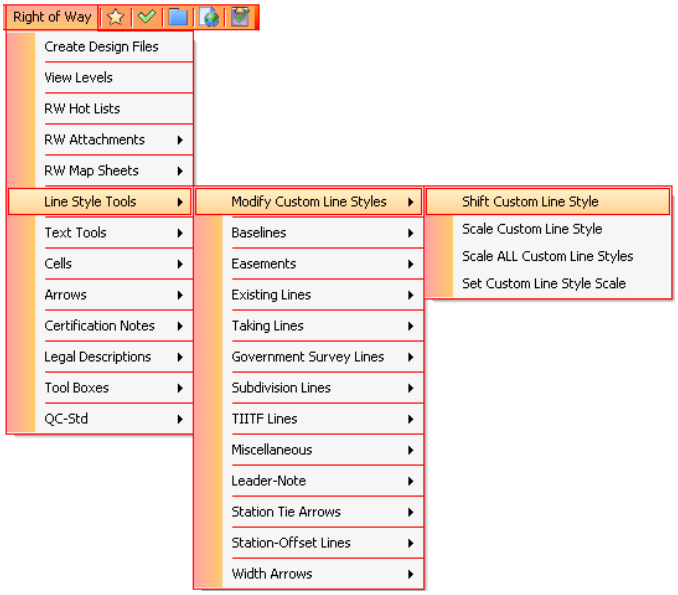
 © 2015 FDOT

SHIFT CUSTOM LINE STYLE

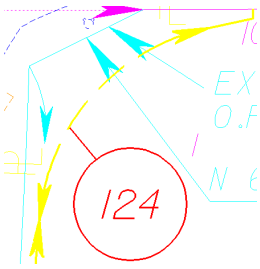
This option dynamically shifts the custom line style pattern when the line style is selected by a data point and the cursor is then moved parallel to the line. When the line style is shifted to the desired position/display, another data point will accept the change.

The steps for using the Shift Custom Line Style are shown next:

1. Select **Line Style Tools > Modify Custom Line Styles > Shift Custom Line Style** from the Right of Way FDOT Menu.



4. Select the *Custom Line Style* to be shifted by left-clicking on any portion of the line.
5. Move the cursor away from the *Custom Line Style* and the line style pattern will shift dynamically.



6. Left-click again to accept the newly shifted appearance of the *Custom Line Style*.

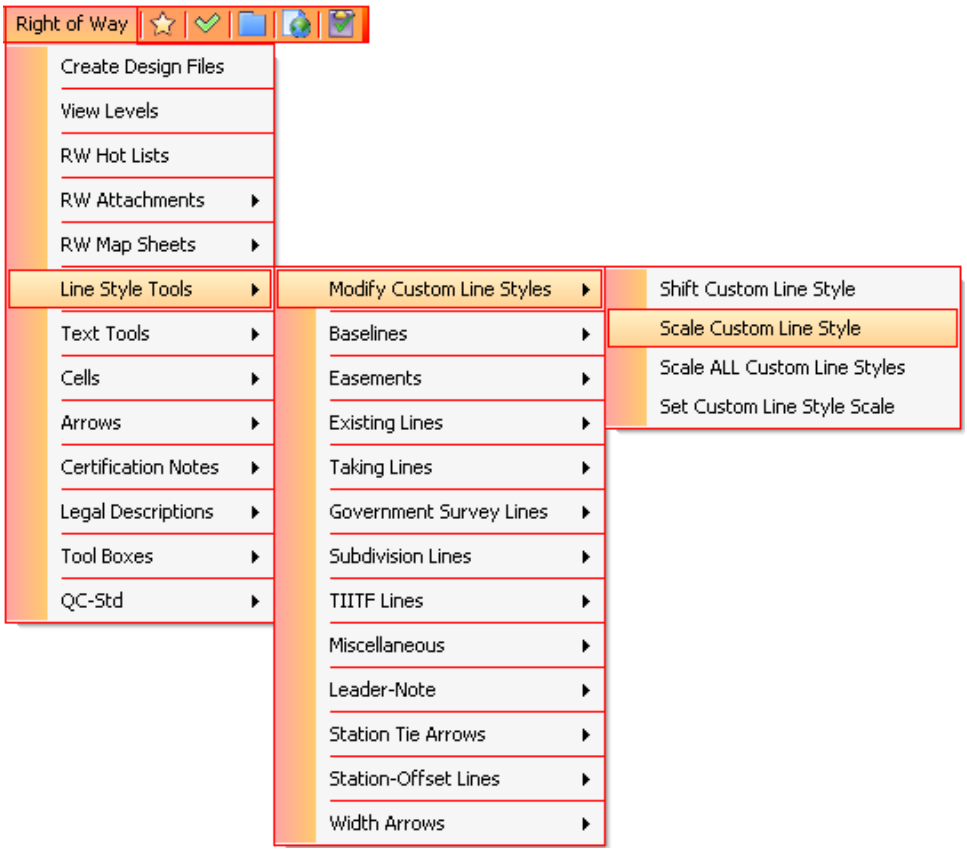
 © 2015 FDOT

SCALE CUSTOM LINE STYLE

This option dynamically scales the custom line style pattern when the line style is selected by a data point and the cursor is then moved parallel to the line. When the line style is scaled to the desired amount, another data point will accept the change.

The steps for using the Scale Custom Line Style tool are shown next:

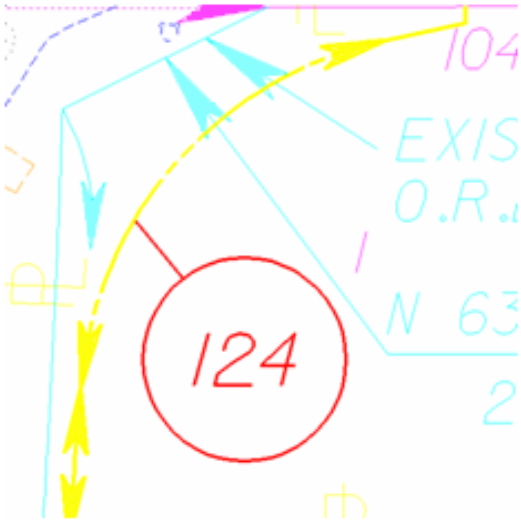
1. Select **Line Style Tools > Modify Custom Line Styles > Scale Custom Line Style** from the Right of Way FDOT Menu.



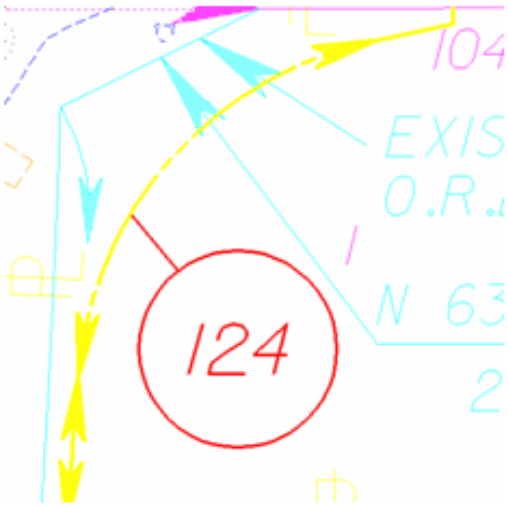
2. Select the *Custom Line Style* to be scaled by left-clicking on any portion of the line.

 © 2015 FDOT

3. Move the cursor away from the *Custom Line Style* and the line style scale will shift dynamically.



4. Left-click again to accept the newly scaled *Custom Line Style*.



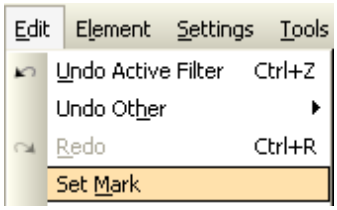
 © 2015 FDOT

SCALE ALL CUSTOM LINE STYLES

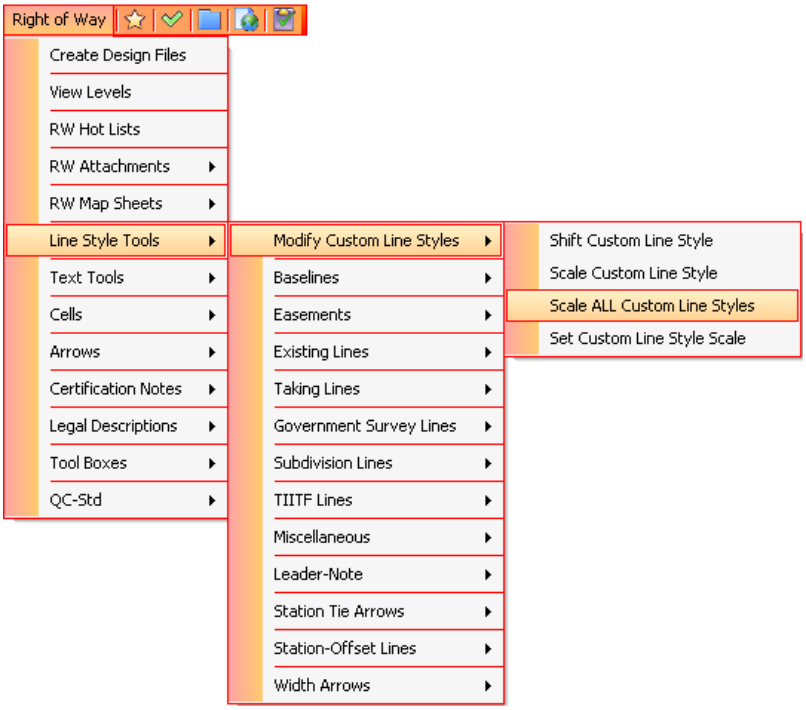
When the **Scale All Custom Line Styles** option is selected, the dialog shown next displays. The desired custom line style scale is selected from the text window. When the OK button is selected ALL custom line styles in the current design file will be scaled.

The steps for using the Scale All Custom Line Styles tool are shown next:

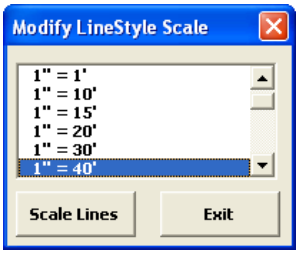
1. From the MicroStation menu, select **Edit > Set Mark**. This will allow the user to undo the changes if they do not appear as intended.



2. Select **Line Style Tools > Modify Custom Line Styles > Scale ALL Custom Line Styles** from the Right of Way FDOT Menu.



3. Select the new *Scale* for Custom Line Styles. The next example would set all Custom Line Style *Scale* in the DGN file to **1" = 40'**. Click **Scale Lines** to apply the new Custom Line Style *Scale* to the entire DGN file.

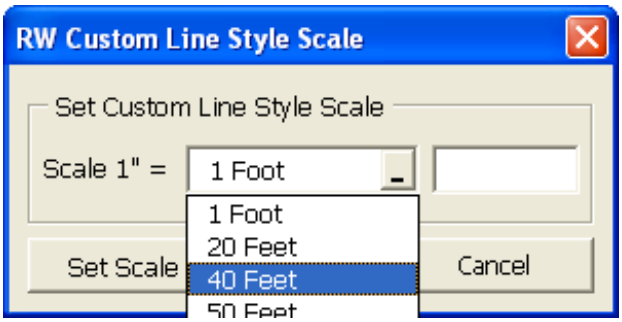


4. If the results are not satisfactory, then choose **Edit > Undo > Other > To Mark** from the main MicroStation menu.

 © 2015 FDOT

SET CUSTOM LINE STYLE SCALE

When the **Set Custom Line Style Scale** option is selected, the dialog shown next displays. The desired custom line style scale is selected from the text window. When the Set Scale button is selected the following custom line styles for the current design file will be placed at this scale.



MICROSTATION TOOLS

The CHANGE LINESTYLE SCALE key-in is used to scale an element's Custom Line Style by a specific factor. This method has the same effect as the **Scale Factor** setting in the Line Styles dialog. If the user does not specify a scale factor, a factor of 1.0 is assumed.

To scale an element's Custom Line Style by a specific factor:

1. Select the element(s).
2. Key in CHANGE LINESTYLE SCALE [scale_factor].

Alternative Method to scale an element's (custom) line style by a specific factor:

1. Key in CHANGE LINESTYLE SCALE [scale_factor].
2. Identify the element.
3. Accept the element.

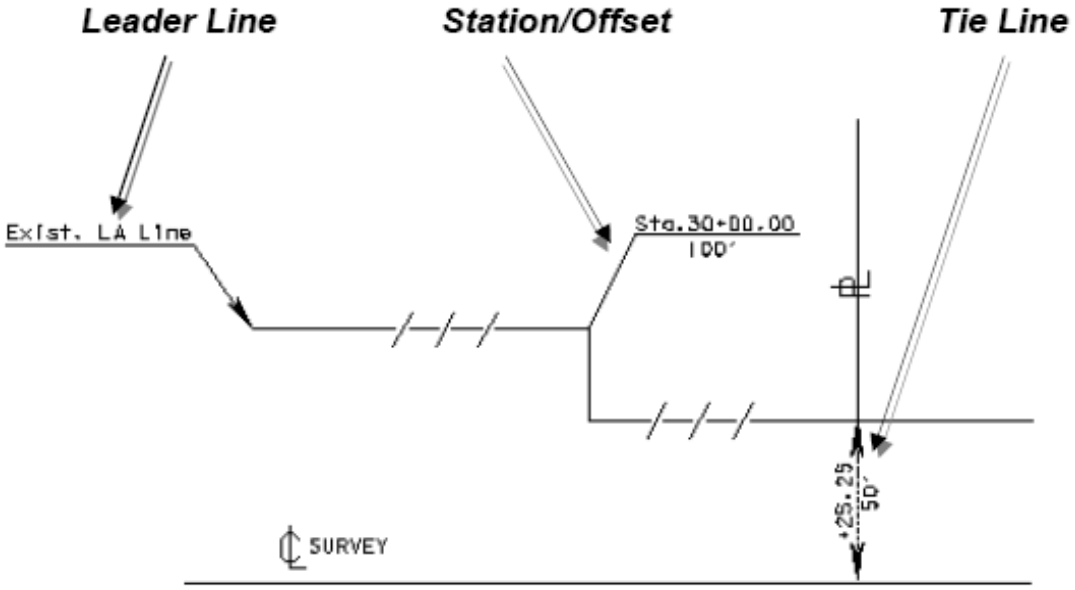
To scale the Custom Line Style of elements contained in the fence by a specific factor:

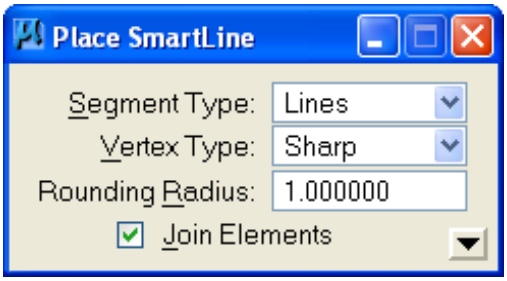
1. Place the fence and set the Fence mode appropriately.
2. Key in CHANGE LINESTYLE SCALE [scale_factor].
3. Accept the fence contents.

© 2015 FDOT

LEADER LINES, TIE LINES AND STATION/OFFSET LINES

These three categories, which can be found and set through the MicroStation XM Level Manager, contain the same list of items for setting the symbology of each line type listed in the Line Symb menu. The symbology for **Leader-Note Lines (No Terminator)**, **Leader-Note Lines (With Terminator)**, **Tie Lines** and **Station-Offset Lines** have required symbology standards. A diagram of each category and their typical use is shown next:





Note	When placing Custom Line Styles with Arrows ensure that Join Elements is checked on to avoid Arrows at each vertex.

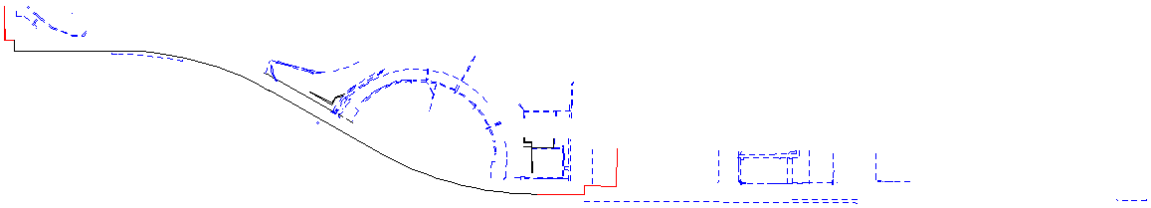
 © 2015 FDOT

Exercise 8.1 Finish Placing Custom Line Styles

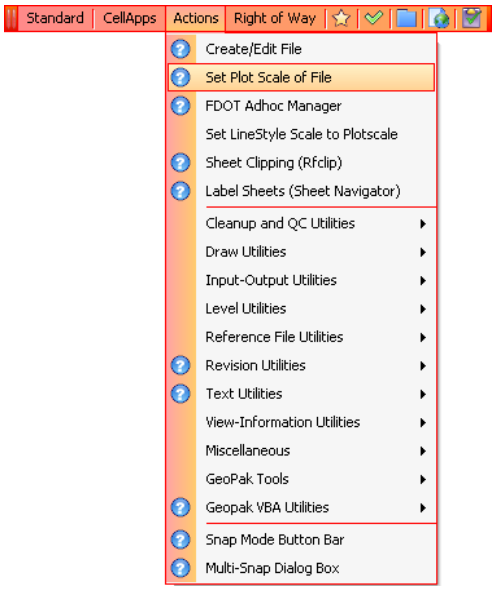
➢ ***In this exercise the user will finish placing custom line styles into the rw1234567.dgn.***

1. Open the DGN file C:\E\Projects\12345678901\rwmap*RW1234567.dgn* and open the **Chapter 8** *Model*.

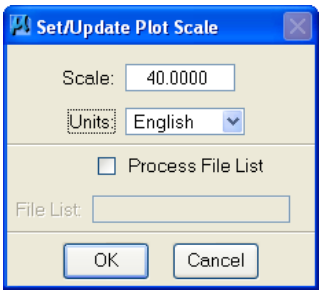
2. The Right-of-Way map should display as shown below. All Levels have been turned off except for **Levels 3, GovCityLimitLine_ep, and EaseLine_ep**. Level 3 is used as a backdrop for the user to "trace" over to place new elements into the file. If unsure of the proper type of element, the user can Reference the *RW1234567_FINISHED.dgn* from the *\rwmap* folder of the project or ask the instructor.



3. It will first be necessary to set the *Plot Scale* of the DGN file. From the FDOT Menu, select the command button or select the menu option: **Actions > Set Plot Scale of File**.

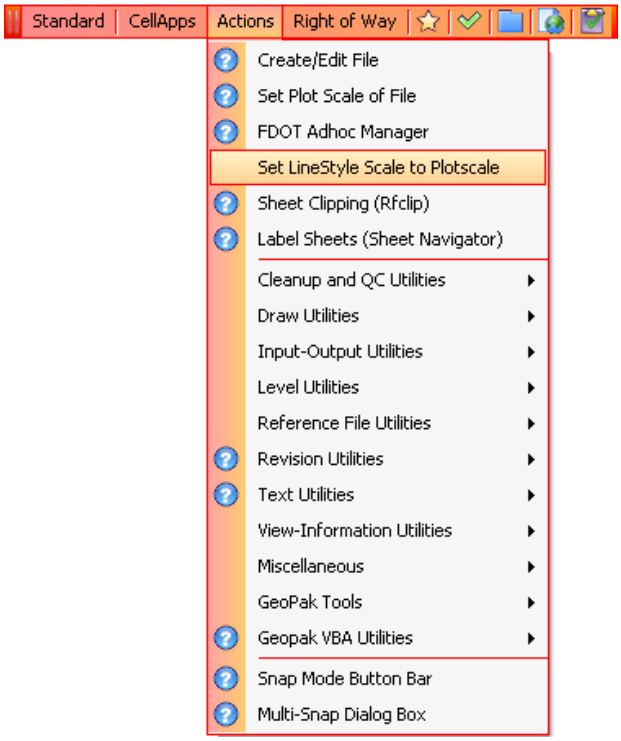


4. The Set/Update Plot Scale dialog will display as shown. Change the *Scale* to **40** and the *Units* to **English** and click **OK.**

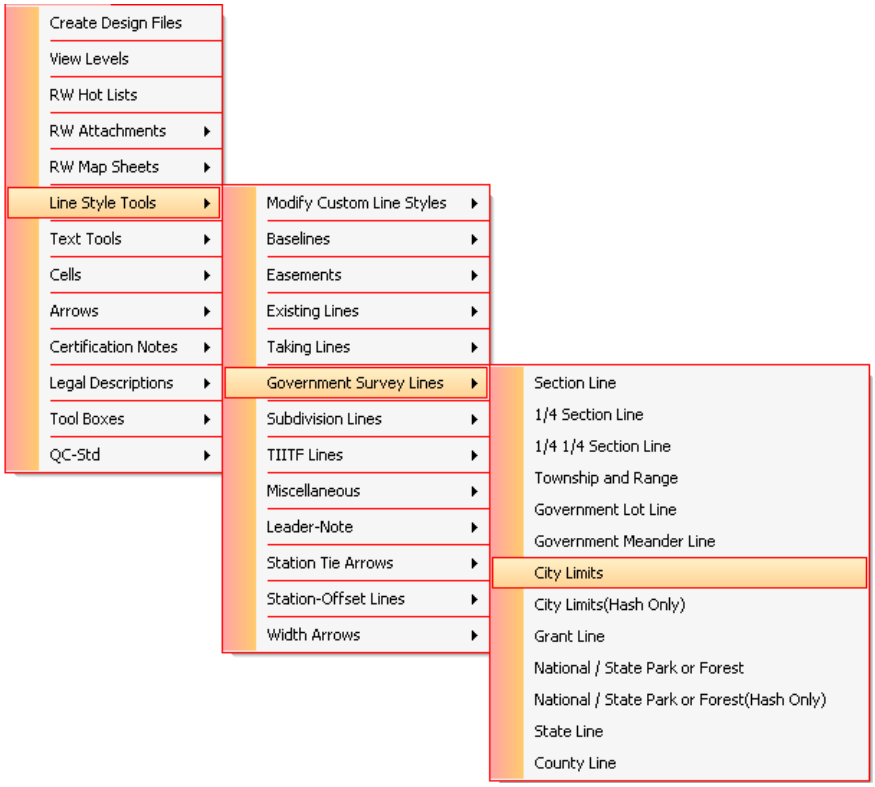


 © 2015 FDOT

5. Now the *LineStyle Scale* will be set to the **Plot Scale** of the DGN file. To do this select **Actions > Set LineStyle Scale to Plotscale** using the FDOT Menu as shown below.

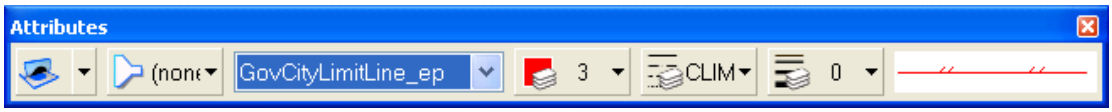


6. Select **Line Style Tools > Government Survey Lines > City Limits** from the Right of Way FDOT Menu.

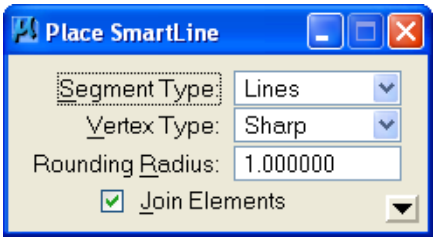


 © 2015 FDOT

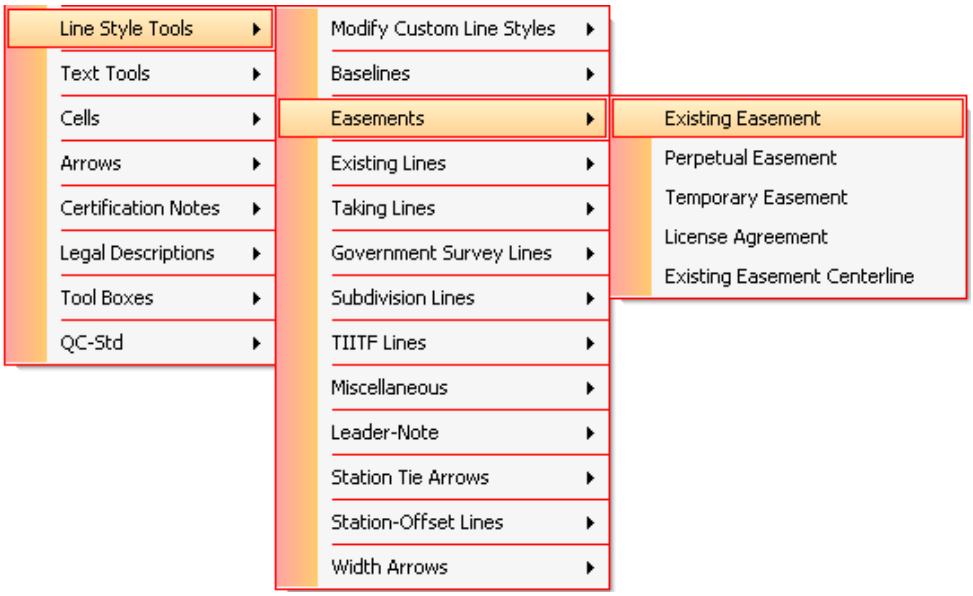
7. This will set the *Level* to **GovCityLimitLine_ep**. The ByLevel symbology will ensure that the correct Custom Line Style is selected. The *Level* and *Custom Line Style* can be verified by checking the **Attributes** tool bar as shown below.



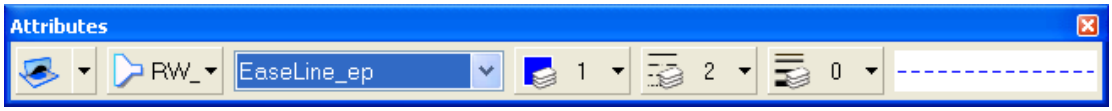
8. Use MicroStation's **Place SmartLine** tool to place *City Limit Lines* in the appropriate place in the DGN file. If unsure of the locations Reference the file *RW1234567_FINISHED.dgn* from the ***\rwmap*** folder of the project or ask the instructor.



9. Select **Line Style Tools** > **Easements** > **Existing Easements** from the Right of Way FDOT Menu.

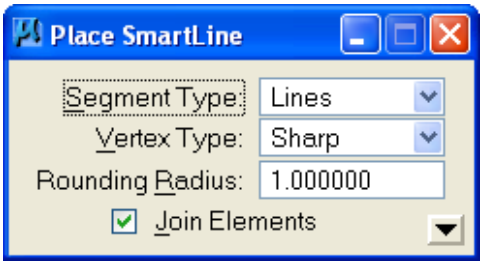


10. This will set the *Level* to **EaseLine_ep**. The ByLevel symbology will ensure that the correct Custom Line Style. The *Level* and *Custom Line Style* can be verified by checking the **Attributes** tool bar as shown below.

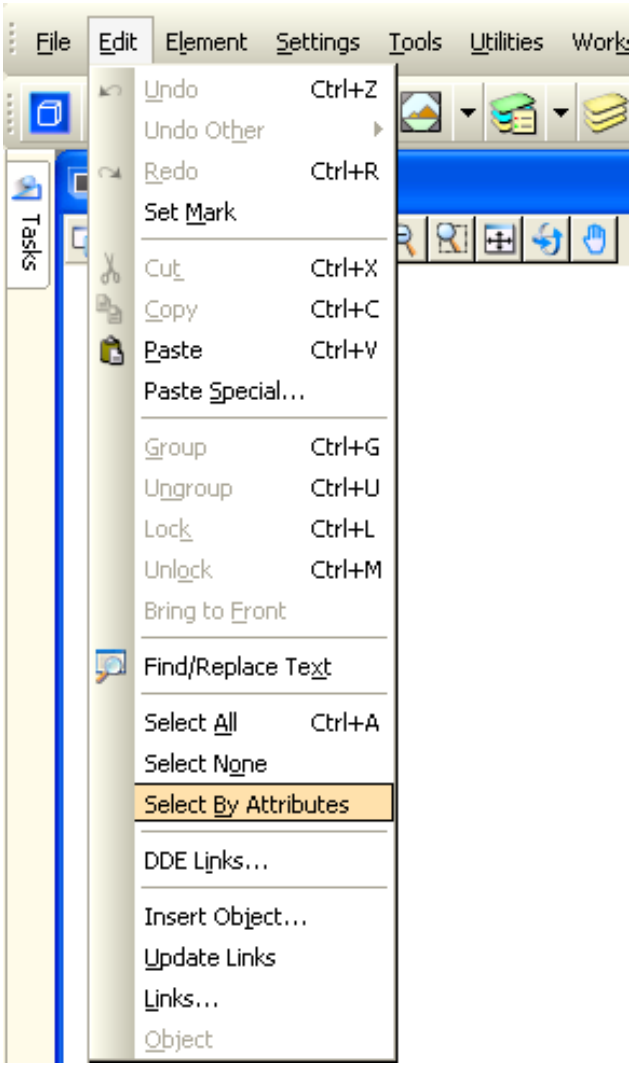


 © 2015 FDOT

11. Use MicroStation's **Place SmartLine** tool to place *Existing Easement Lines* in the appropriate place in the DGN file. If unsure of the locations Reference the file *RW1234567_FINISHED.dgn* from the ***\rwmap*** folder of the project or ask the instructor.

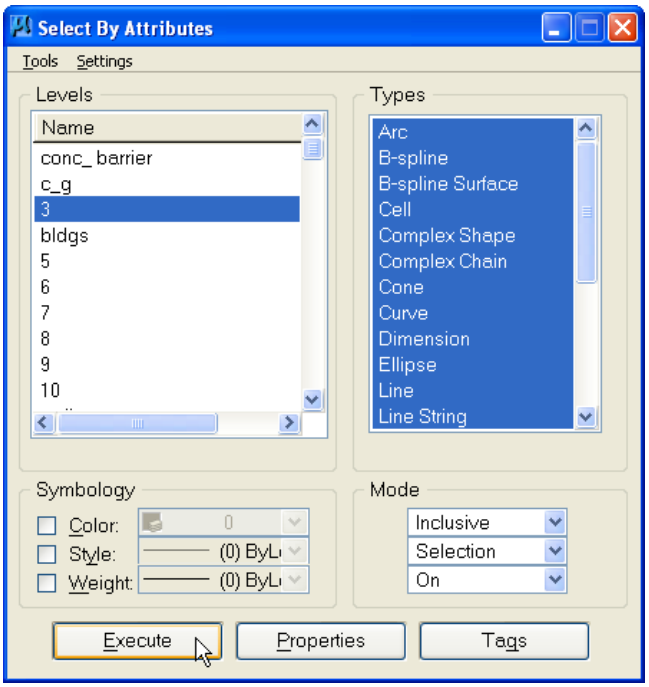


12. Once finished with placing the remaining *City Limit Lines* and *Existing Easement Lines* select **Element > Select By Attributes** from the main MicroStation menu. This command will be used to delete all elements from *Level 3*.

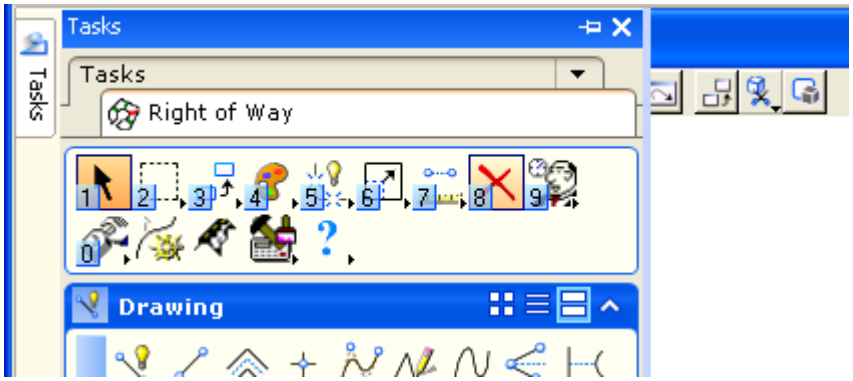


 © 2015 FDOT

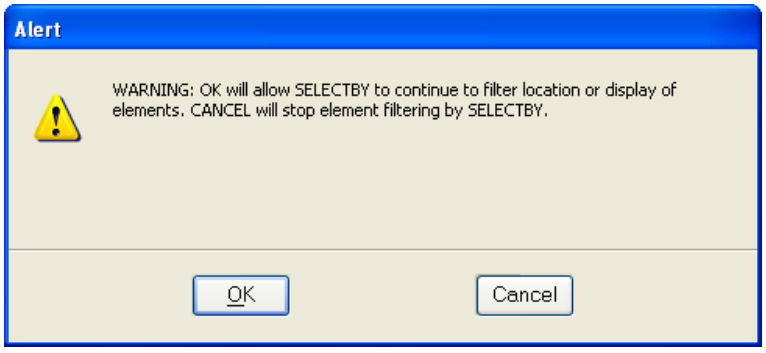
13. The Select By Attributes dialog will display as shown below. Click *Level* **3** and then click **Execute** to select ALL element types on *Level 3*.



14. Click the MicroStation's **Delete Element** tool to delete all elements on *Level 3* in the DGN file.



15. Close the Select By Attributes dialog and click **Cancel** to the Alert that displays.



 © 2015 FDOT

9 RIGHT OF WAY TEXT TOOLS

OBJECTIVES

This chapter will review the RW Text tools from MicroStation and Right of Way FDOT Menu. Items covered will include:

- Set Text Size
    - FDOT Menu Method
    - MicroStation Methods
- Text Settings
    - Text Toolbox
- Text Editor
- Modify Text
    - Find and Replace Text
- GEOPAK Labeler (Activation Only)
- Text "Masking" and Select By Attributes

INTRODUCTION

Due to the large variety of items shown on FDOT Right-of-Way maps, it is necessary to use Text Tools to label elements representing roads, subdivisions, government lines, dimensions, and other portions of the Right-of-Way map. This is especially true for hard copy versions of Right-of-Way maps since the user will not have the advantage of having an electronic copy that allows for some interpretation of elements via symbology such as Level, Color, Line Weight, and Line Style.

SET TEXT SIZE

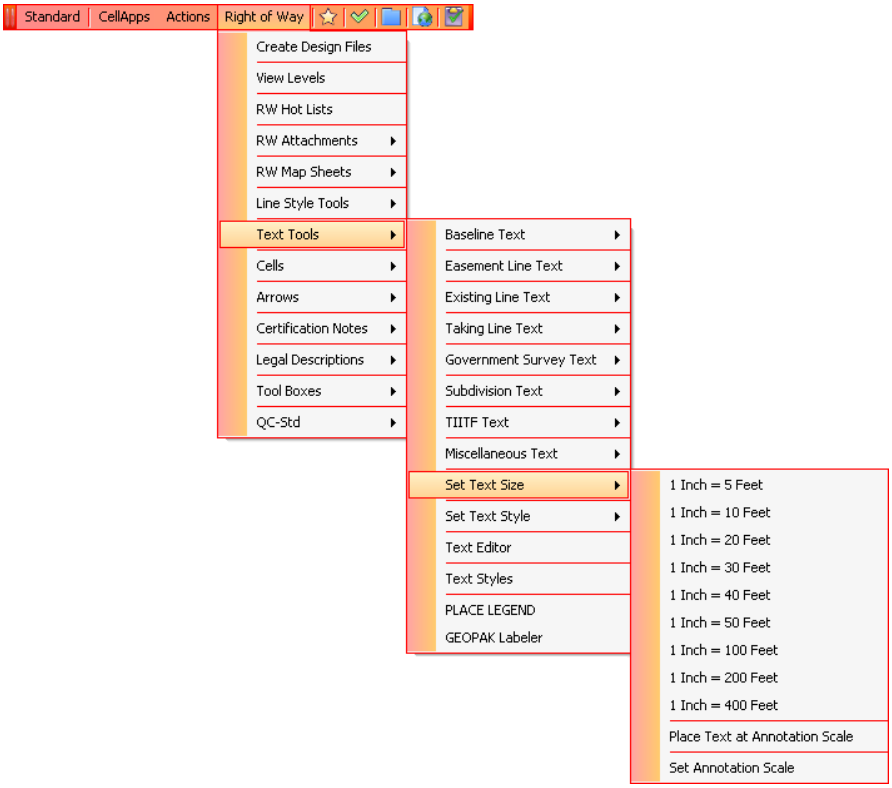
In order to get the correct text display on Right-of-Way maps, the text size must be set to be equivalent to the final Plot Scale of the DGN file. Methods are available from both the Right of Way FDOT Menu and MicroStation. Both methods will give the same results, but the preferred method for FDOT Right-of-Way Mappers is by using FDOT Menu to set the text size. Steps for both methods are outlined next.

FDOT MENU METHOD

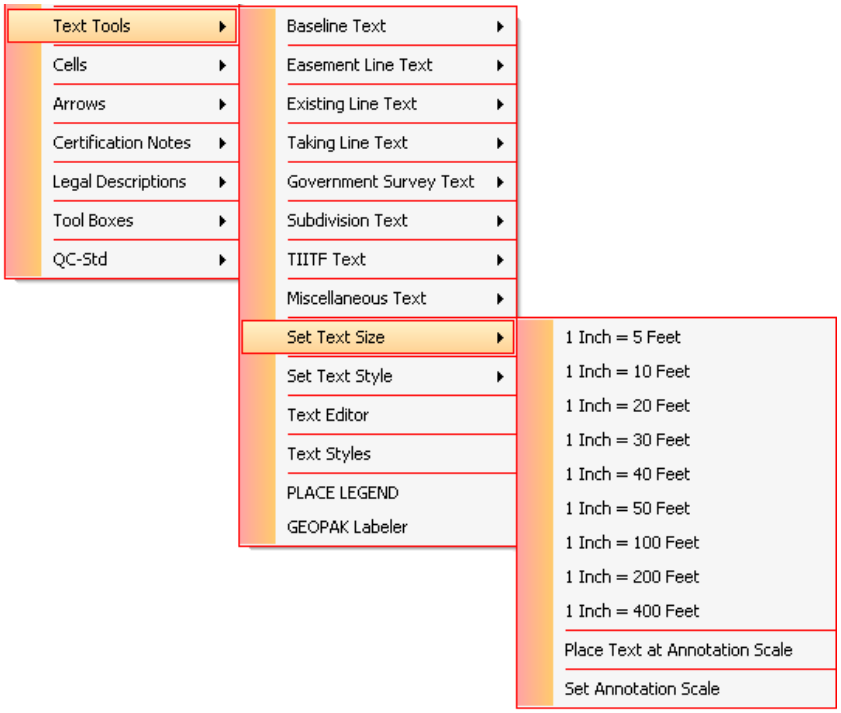
Ideally, the Plot Scale of the Right-of-Way map should be set first and then the text size should be set to the same value. For example, if the Plot Scale of the DGN file is set to 1" = 40', the text size should be set to 1" = 40' as well. However, to allow additional flexibility to the FDOT Right-of-Way Mapper the text size can be set independent from the Plot Scale.

The steps for setting the Text Scale from the Right-of-Way FDOT Menu are shown next:

1. Select **Text Tools > Set Text Size** from the Right of Way FDOT Menu.



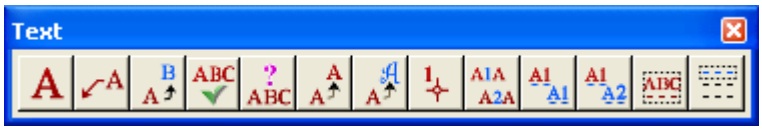
2. Select the *Text Size* desired from the list displayed. The following example shows a *Text Size* setting of **1 inch = 40 feet**.



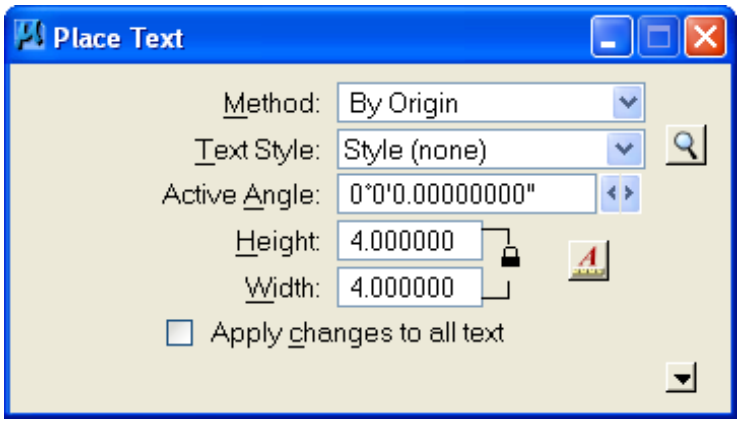
MICROSTATION METHOD

Setting the proper text size through MicroStation will require the Right-of-Way Mapper to access MicroStation's Place Text tool. Then, the user will want to set the text size to match the final Plot Scale according to the table shown as part of the following steps.

1. Select the Place Text Tool from MicroStation's main menu bar as shown.



2. Set the text size according to the table below in the **Place Text** dialog. The next example shows the text size set for a scale of 1" = 40'.



Recommended Base Text Sizes for (ENGLISH) R/W Mapping D-Size (24" x 36")

SCALE	RECOMMENDED TEXT SIZE
1" = 5'	0.5'
1" = 10'	1.0'
1" = 20'	2.0'
1" = 30'	3.0'
1" = 40'	4.0'
1" = 50'	5.0'
1" = 100'	10.0'
1" = 200'	20.0'
1" = 400'	40.0'

Note Readability of text data should be considered as priority. However, no text should be smaller than 3.2' on a 1" = 40' scale (0.08" actual plotted size).

© 2015 FDOT

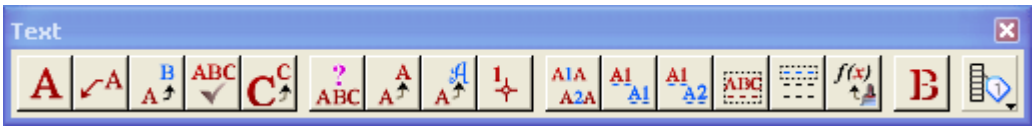
TEXT SETTINGS

Obviously text size is one of the more important text settings due to its impact on readability (or lack thereof). However, there are many other text settings that should be chosen correctly to comply with FDOT CADD standards. The primary text settings to be considered by the FDOT Right-of-Way Mapper include:

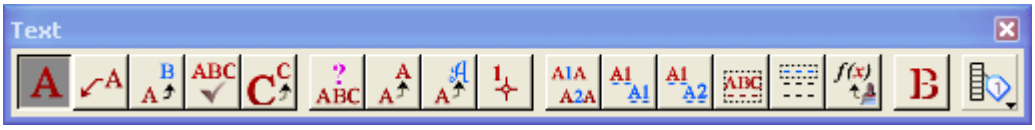
- Text ByLevel which controls the Color and Line Style
- Text Height, Width, and Spacing (Inter-character and Line)
- Text Placement
    - By Origin
    - Fitted
    - View Independent
    - Fitted VI
    - Above Element
    - Below Element
    - On Element
    - Along Element
    - Word Wrap

TEXT TOOLBOX

The Text tool box is one of the largest toolbars available in MicroStation. It contains the most commonly used tools for creating and editing text. The Text tool box can be accessed via MicroStation's **Text** tool box. If MicroStation's **Text** toolbox is not visible the user can activate it by navigating to **Tools** > **Text**.

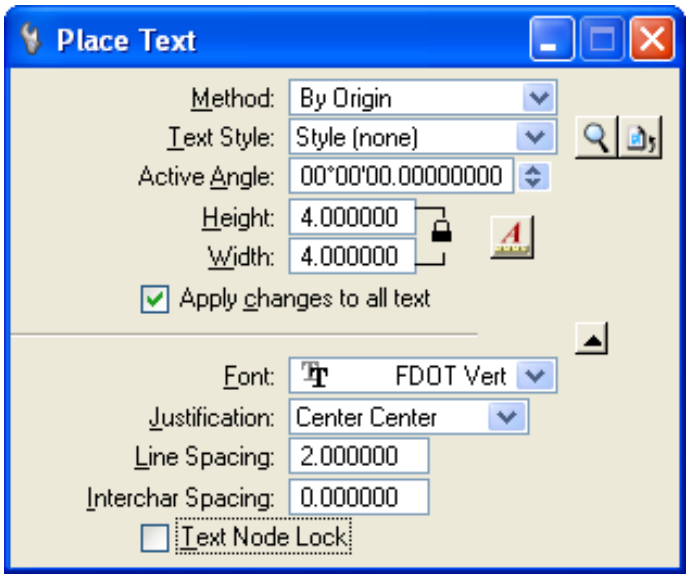


The primary tool for placing Text in a Right-of-Way map is the **Place Text** tool which is the first icon in the **Text** toolbox. The *Place Text* icon is shown next.



The Place Text dialog contains all of the settings that control how the text will display when it is placed. It contains everything from the size of the text to the distance between the individual characters themselves. The Place Text dialog along with descriptions for each of the field in the dialog displays on the next few pages.

© 2015 FDOT

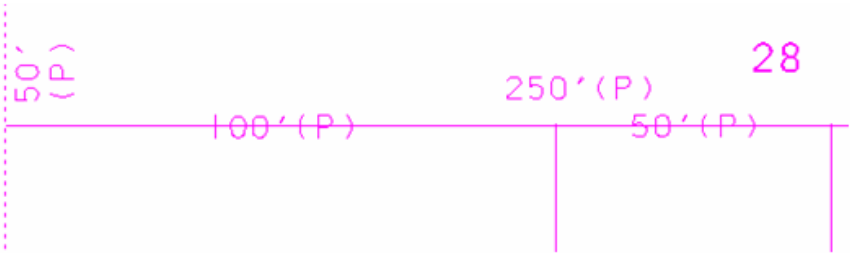


- **Method** Users can set the method by which text is placed using the Method option menu in the tool settings. There are nine different methods to use when placing text.

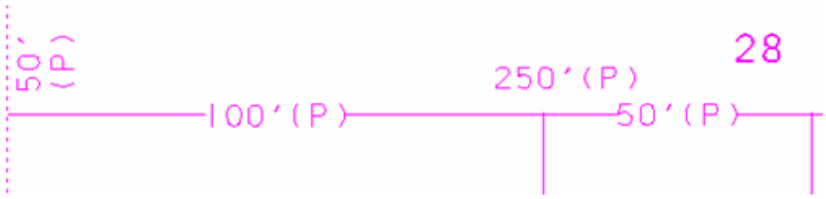
By Origin	Dynamically places text with a data point.
Fitted	Dynamically places a single line of text to fit between two data points. text size and rotation angle adjust with the distance between the data points.
View Independent	Similar to the By Origin method except that the text does not rotate with a view rotation.
Fitted View Independent	Similar to the Fitted method except that the text does not rotate with a view rotation.
Above Element	Places text above a selected element. The spacing between the text and element is determined by the Line Spacing setting. The position of the text, relative to the selected element data point, is determined by the Justification setting.
Below Element	Places text below a selected element. The spacing and positioning of text is determined in the same manner as the Above Element method.
On Element	Places text on a selected element automatically removing the portion of element that passes through the text. Text orientation is along the element axis.
Along Element	Places text above or below a selected element with two additional features. The string of text characters aligns with the contour of the element and the characters form a graphic group.
Word Wrap	Places text within a rectangular element. The rectangular element is placed during the command. Justification is always orientated to the upper left vertex of the rectangular element.

© 2015 FDOT

- **Text Style** FDOT RW Mappers will want to be aware of a RW Text Styles called **Std. R/W Text Mask 0, Std. R/W Text Mask 1 and Std. R/W Text Mask 2**. This Text Style has a black background that will allow users to "mask" line work when placing text over a linear or other element.



Std. R/W Text



Std. R/W Text with background

- **Active Angle** This value can be set in the Place Text tool settings, and is essential when placing text. The Active Angle setting affects many tools as it specifies the angle, in degrees, at which elements will be placed in the design file. The text placed in a drawing is aligned with this active angle. This allows the user to place text at any angle. When the value of the Active Angle is set to 0, text displays horizontal across the screen.
- **Height & Width** The size of the text defined in working units. Height and Width can be set by typing the value of the Height and Width into their respective fields.
- **Apply Changes to All Text** If on, applies style changes to all text in the Text Editor window. For example, if the user keys in text in the Text Editor, then click the Bold icon, all text becomes bold. If off, applies style changes to selected text in the Text Editor window, or to new text. For example, if the user keys in text in the Text Editor, then click the Bold icon, only selected text becomes bold. Any new text will also be bold.
- **Font** MicroStation uses True Type fonts that are delivered with Windows. FDOT has created True Type Fonts for the departments to use. To activate a font, it must be selected from the pull down. There are three fonts created exclusively for Right of Way Mapping, FDOT Vert, FDOT Vert Bold and FDOT Vert Heavy. These fonts "mimic" the "Leroy" font style and are vertical fonts. Some keystrokes are defined for the true type fonts that allow the Right-of-Way Mapper to place special characters in the drawing file. Keystrokes for True Type Fronts and special characters are shown in the tables below.

Key Strokes for True Type Fonts

Key Stroke	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Result	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	Q	r	s	t	u	v	w	x	y	z
	~	!	@	#	$	%	^	&	*	(	)	_	+	{	}	|	:	"	<	>	?					
	~	!	@	#	$	%	^	&	*	(	)	_	+	{	}	|	:	"	<	>	?					
	`	1	2	3	4	5	6	7	8	9	0	-	=	[	]	\	;	'	,	.	/					
	`	1	2	3	4	5	6	7	8	9	0	-	=	[	]	\	;	'	,	.	/					
	1/8	1/4	3/8	1/2	3/4	5/8																				
	1/8	1/4	3/8	1/2	3/4	5/8																				

Key Strokes for True Type Fonts Special Characters

Key Stroke - Hold Alt+	0161	0162	0163	0177	0172	0176	0188	0189	0190
Result	₡	₱	₤	±	₳	°	¼	½	¾

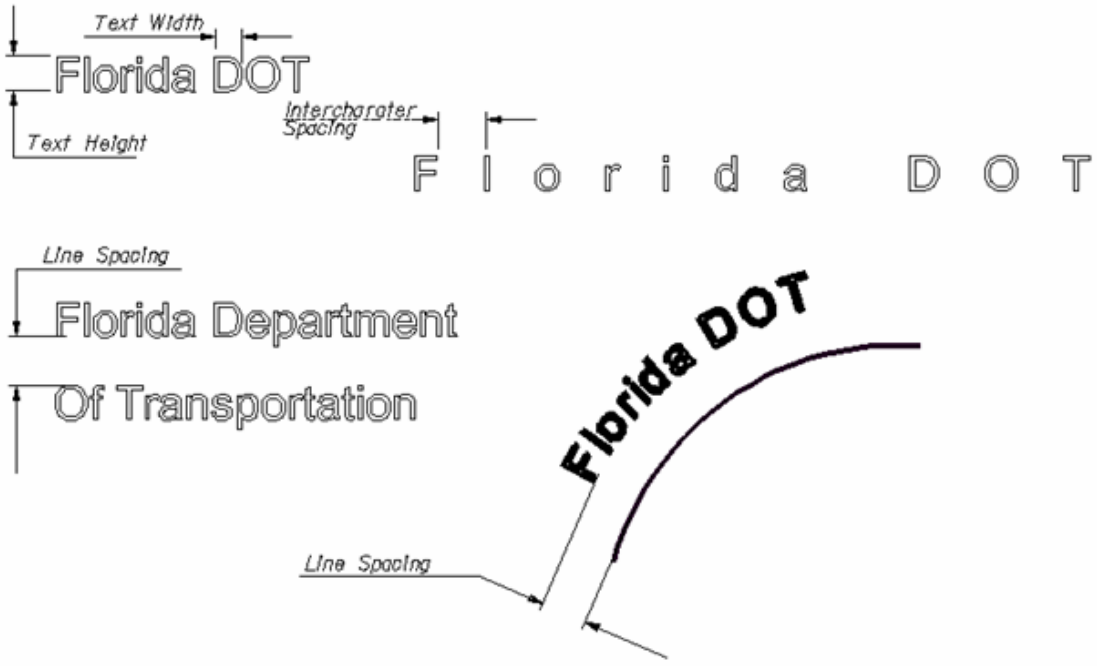
- **Justification** Text Justification is defined as the placement or insertion point of the text. This point is also used when changing the height or width of the text.
- **Line Spacing** Line spacing is defined as the distance vertically between multiple lines of text.
- **Inter-character Spacing** Sets the distance between characters in a text string.
- **Text Node Lock** When on, forces subsequently entered text to be attached to empty text nodes. If an empty node is not available, no text is placed.

MicroStation also has key-in commands available for Text settings. One key-in command that is not available in the **Place Text** dialog is the LL= key-in. Most of the key-in commands are not frequently used, but are provided in the table for reference.

Key-in	Effect
FT=	Sets the font.
TH=	Sets the Text Height.
TW=	Sets the Text Width.
TX=	Sets the Text Height and Width to the same value.
LS=	Sets the Line Spacing.
LL=	Sets the Line Length.
AA=	Sets the Active Angle for rotated text.

 © 2015 FDOT

A sketch of the most commonly used **Text settings** is shown.

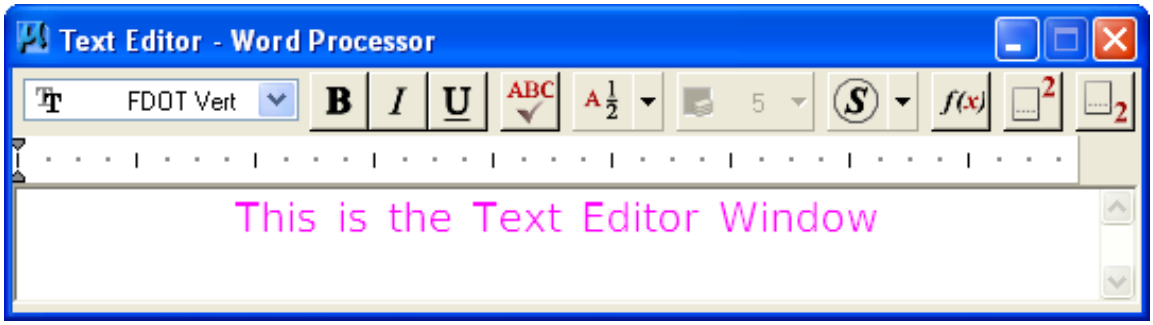


PLACING SPECIAL CHARACTERS

Special Characters can be easily placed from the Text Editor Symbology list.

TEXT EDITOR

Whenever a text placement tool is activated, the text editor window displays. The window is used to compose and format text before it is placed on the drawing. Single line or paragraph text can be created in the text editor window.



The text editor contains a toolbar that can be used to set the active font or affect the display of the text. An excerpt from MicroStation's HELP file showing the toolbar options is shown next:

Sets the font for the text in the editing box.

If on, bolds the text in the editor.

If on, italicizes the text in the editor.

If on, underlines the text in the editor.

Opens the Spell Checker dialog, which is used to spell check the text in the editor.

Causes numeric characters in the text window that are separated by a slash (/) to be placed in the model as single characters with the numerator over the denominator:

- Stacked Fraction Top Align
- Stacked Fraction Center Align
- Stacked Fraction Bottom Align

Sets the color of the text in the editor. This control is similar to that used to set the Active Color. By default, the color is the same as the color as the open DGN file.

Opens the Symbols dialog which is used to insert symbols and create custom symbol lists.

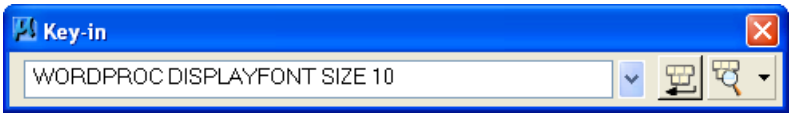
Clicking the down arrow brings up the Favorites List. Commonly used symbols can be inserted directly from the favorites list.

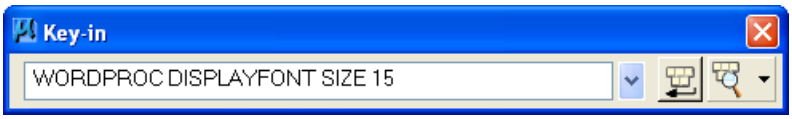
If on, places the text as superscript (numbers that are positioned slightly higher).

© 2015 FDOT

If on, places the text as subscript (numbers that are positioned slightly lower).

To set the size of the text that displays in the editor, key in:
WORDPROCESSOR DISPLAYFONTSIZE <font_size>.





The text editor supports common keyboard shortcuts.

Shortcut	Description
[CTRL] + [F]	Opens the find Dialog, which allows the user to search for words and phrases in the Text Editor Window.
[CTRL] + [A]	Sets the text height.
[CTRL] + [X]	Sets the text width.
[CTRL] + [V]	Sets the text height and width to the same value.
[CTRL] + [B]	Sets the active text to bold.
[CTRL] + [I]	Italicizes selected text.
[CTRL] + [U]	Underlines selected text.

MODIFY TEXT

Modifying text in a FDOT Right-of-Way Map will fall primarily into two categories, changes to how the text statement itself reads and changes to the text statement symbology. In some cases, both the text statement and the text symbology may need to be changed. Some examples are:

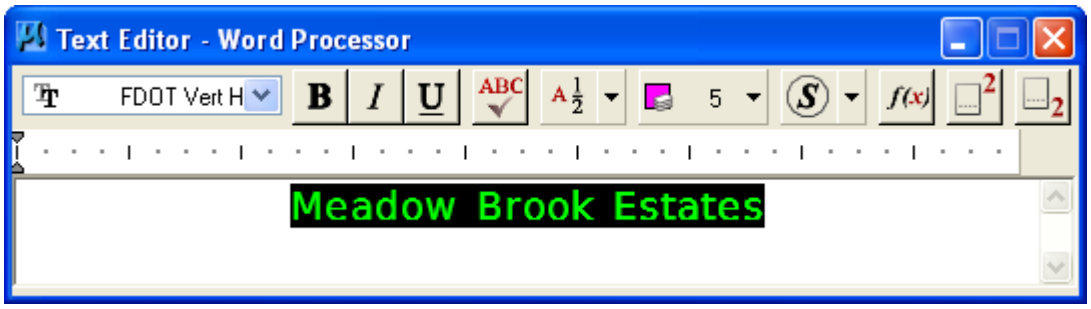
- A subdivision name reads "Meadow Brooke Estates" but should read "Meadowbrook Acres."
- Existing Easement text is on the Level **SubDivLineText** instead of the **EaseExistText** Level.

While there are a variety of ways that the above types of changes can be made, only the suggested methods for the FDOT Right-of-Way Mapper display next.

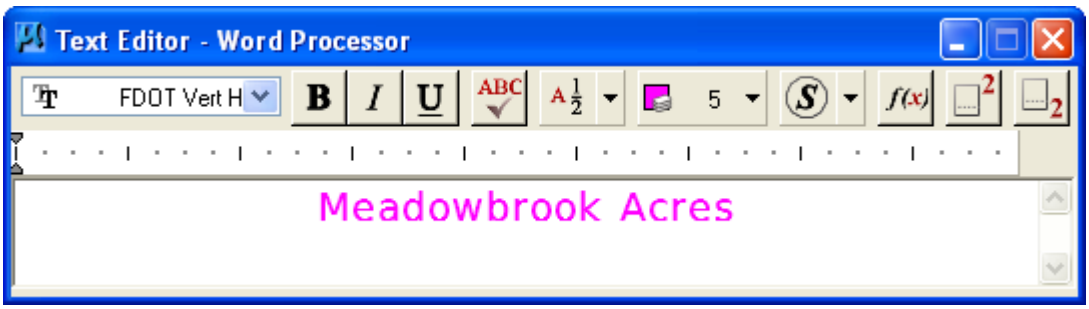
- Example 1 – There are changes needed to the text statement itself:

1. Using the MicroStation Select icon, double-click on the Text to be edited. As an alternative, use the Edit Text tool from the Text toolbar and left-click on the Text to be edited.

2. The Text Editor dialog will open.



3. Type any necessary changes in the Text Editor dialog.

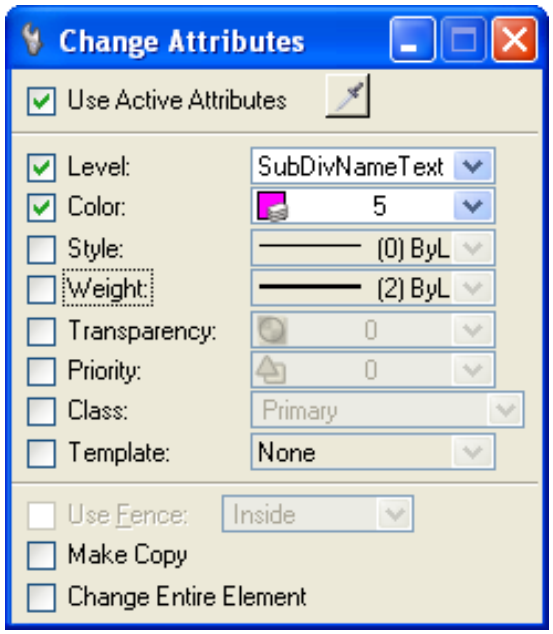


4. Left click in the drawing to accept the changes made in the Text Editor dialog.

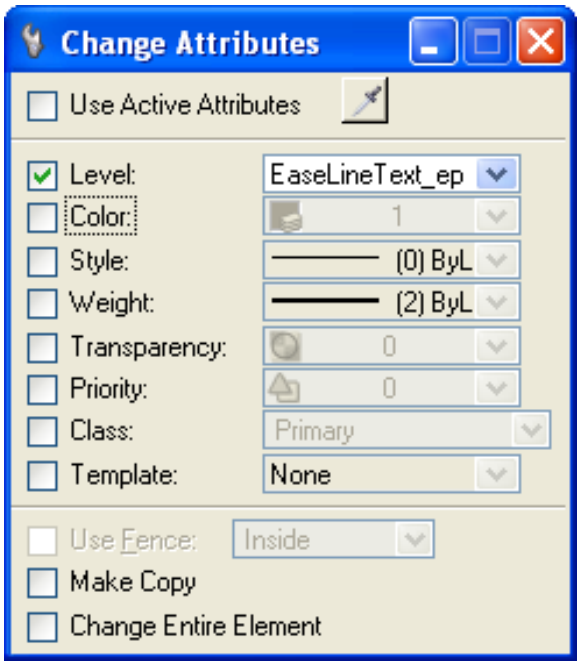
© 2015 FDOT

- Example 2 – There are changes needed to the text symbology:

1. Using the MicroStation Change Element Attributes icon, left-click on the Text to be changed.

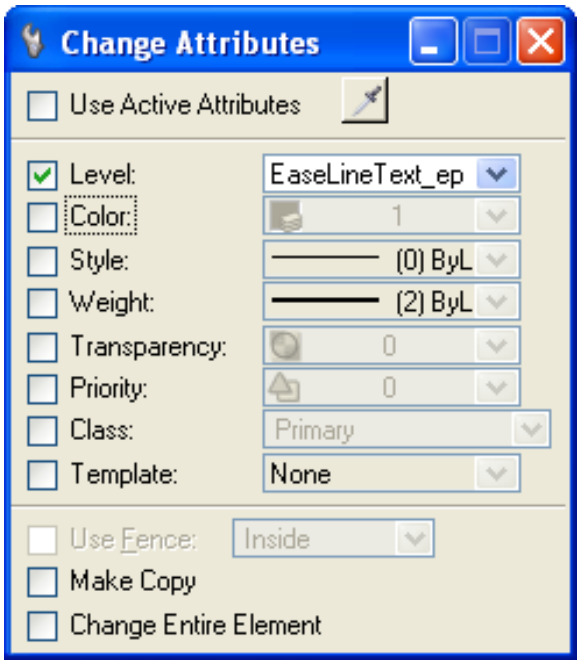


2. Ensure that Use Active Attributes is unchecked and place checkmarks next to the symbology items to be changed. Use the symbology pull-downs to select the Attributes to which the item is to be changed.

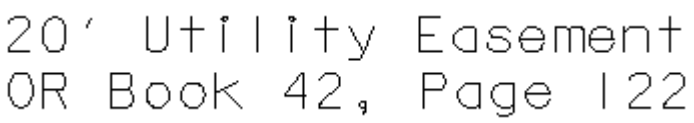


 © 2015 FDOT

3. As an alternative, the user can match the symbology of an existing Text element that contains thecorrect symbology by using the Match Element Attribute option as shown.



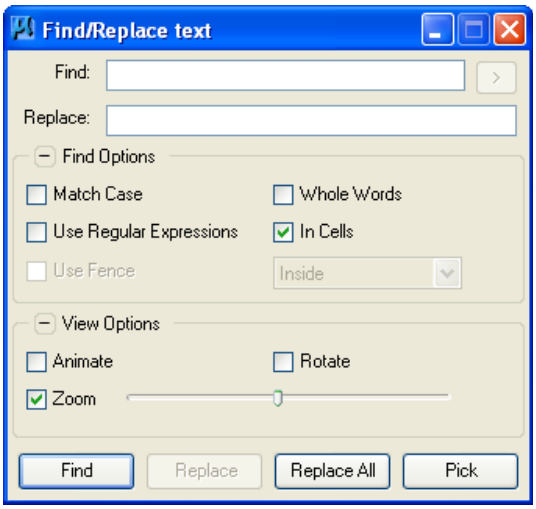
4. Left click on the Text item for which it is desired to change the symbology. The item will then be updated to the new symbology.



 © 2015 FDOT

FIND/REPLACE TEXT

The Find and Replace Text commands are handy tools for locating a text string within a MicroStation design file. To access the *Find/Replace Text* tool select **Edit** > **Find/Replace Text**.

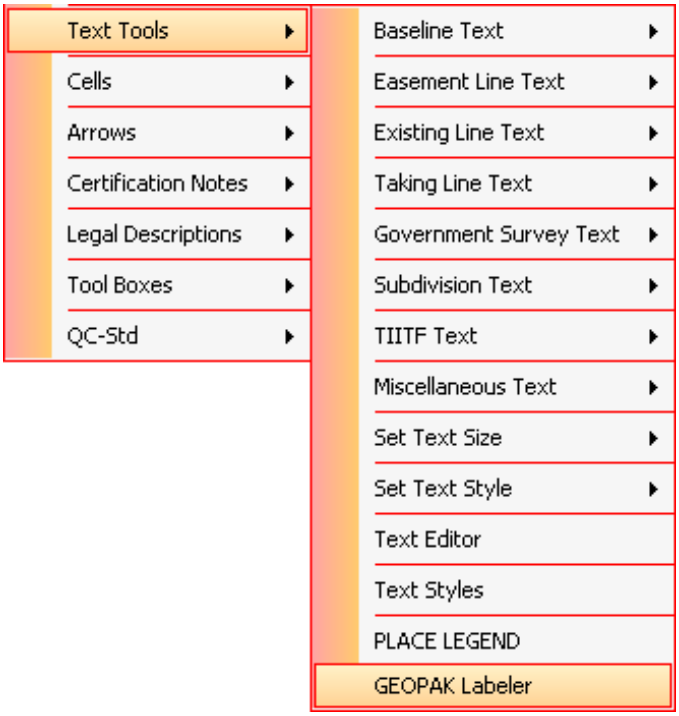


- **Find:** The dialog contains the *Find field* that allows the user to type the string that needs to be located or replaced.
- **Replace:** allows for the replacement of everything in the file with **All**, the contents of a **Fence**, or changing just one **Single** instance.
- **Find Options**
  - *Match Case* - will locate the exact case of the Find text. In the case of text string "Main", only "Main" will be found not "MAIN" or "main".
  - *Whole Words* - specifies a search for complete words not part of another text string. For example, searching for the string "Wood" street would yield only "Wood" Street not "Rushwood" or "Woodhaven".
  - *Use Regular Expressions* -works in conjunction, if this is on then special "wild card" search characters can be used.
  - *In Cells* - allows for the search to be completed within a cell as well.
  - *Use Fence* - specifies a search for text in a fence. The option menu sets the Fence (Selection) Mode
- **View Options**
  - *Animate* - shows the transition from the current view to the destination. You are automatically panned and zoomed to the text so that you can see it in context**.**
  - *Rotate* – rotates the view so that the text displays horizontally
  - *Zoom Factor* - Sets the zoom factor applicable to zooming in or out on the text being searched for in the model. This slider adjusts from left is a smaller text display moved right is a lager text display.
- **Find** Locates the next instance of the text in the **Find:** field
- **Replace** Replaces the found text with the text in the **Replace:** field
- **Replace All** Places all instances of the text in the **Find:** filed with the text in the **Replace:** field throughout the dgn.
- **Pick** Launches a tool that allows you to pick individual elements and to do the replace operation immediately upon picking.

© 2015 FDOT

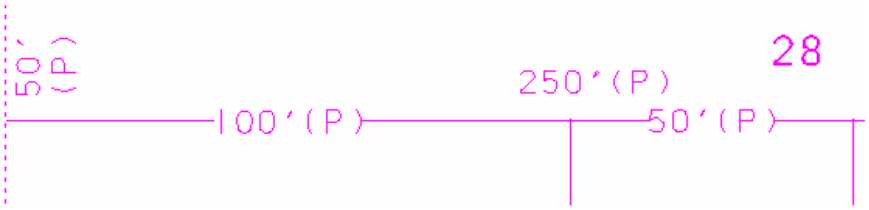
GEOPAK LABELER (ACTIVATION ONLY)

To activate the GEOPAK Labeler, select **Right of Way > Text Tools > GEOPAK Labeler**. The GEOPAK Labeler is covered in another section of this class.

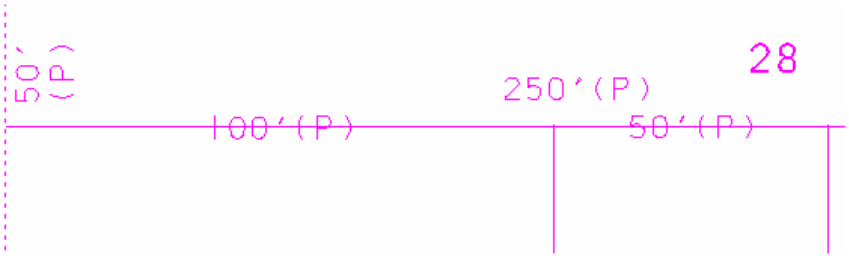


TEXT "MASKING" AND SELECT BY ATTRIBUTES

In MicroStation XM, FDOT RW Mappers are able to take advantage of the ability to have text with a background color (usually black). This eliminates the need to partially delete linear elements in order to have text display correctly within the limits of the linear element itself. An example of this is shown next.



However the correct display of the text with background is dependent upon the text element being drawn into the DGN file AFTER the linear element. If the text element is drawn into the DGN file BEFORE the linear element OR the linear element is drawn ON TOP OF the text element, the display is as shown next.

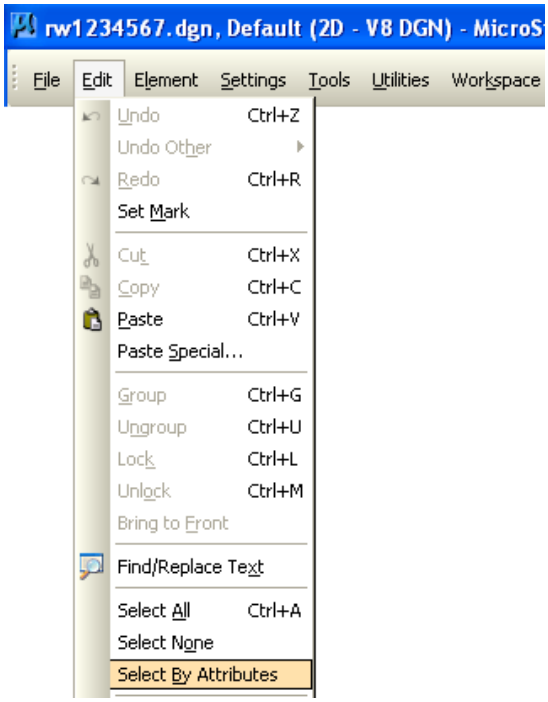


 © 2015 FDOT

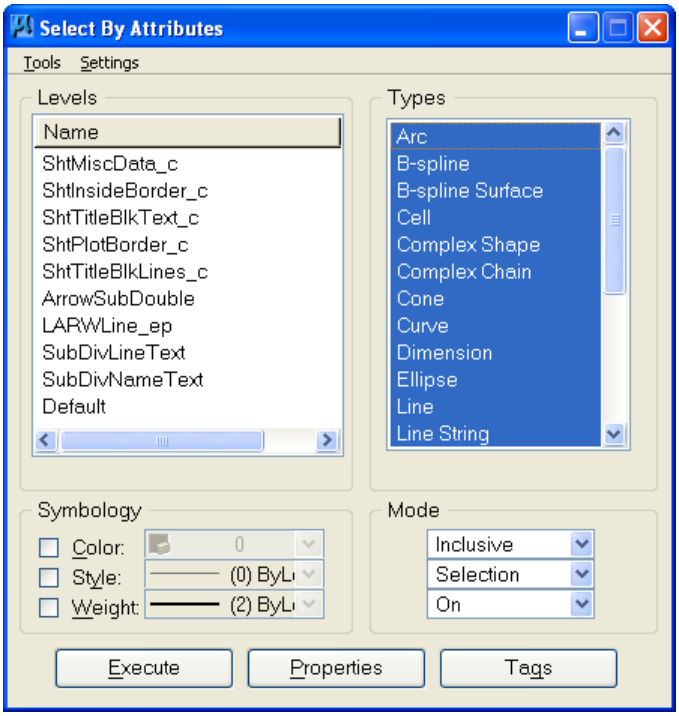
To eliminate this problem, the RW Mapper should develop the habit of using the MicroStation command **Select By Attributes** in conjunction with the key-in command **ORDER ELEMENT FRONT** in order to bring text (and cells) elements into the foreground before plotting.

The procedure for this is shown in the following steps:

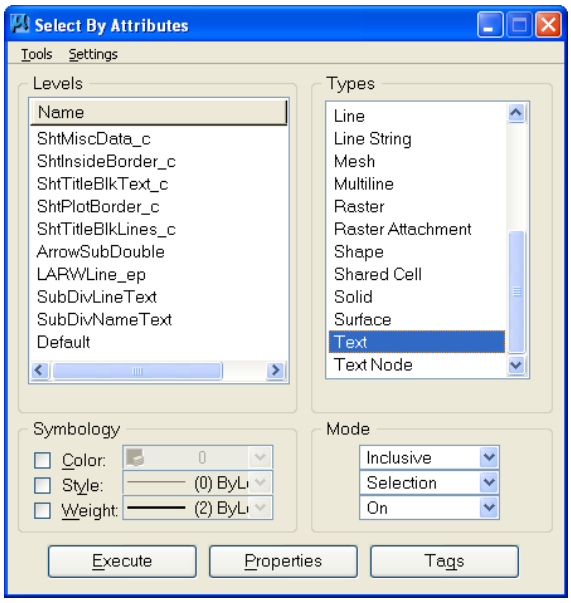
1. From the main MicroStation menu, select **Edit** > **Select By Attributes**.



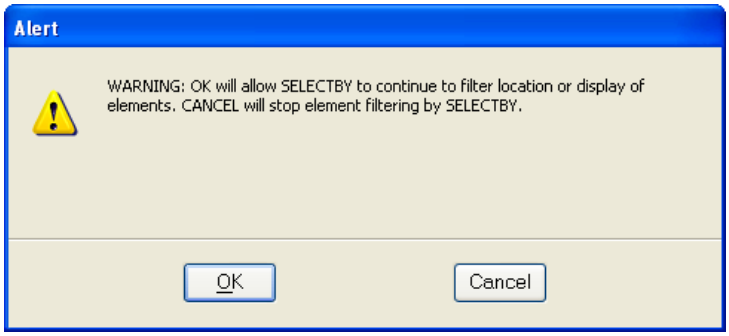
2. This will display the Select By Attributes dialog.



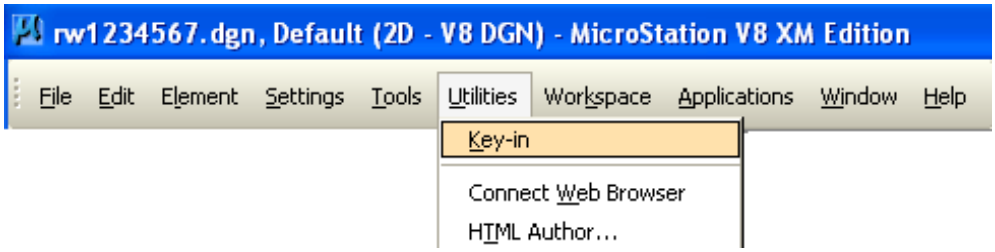
3. From the Select By Attributes dialog select the **Types** of **Cell** and **Text** and then click **Execute**. This will select and highlight all Cells and Text in the current DGN file.



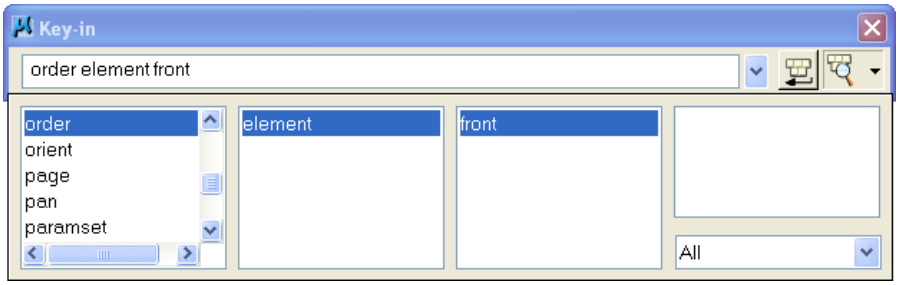
4. Close the Select By Attributes dialog and click **Cancel** to the Alert that is displayed. The selected elements will still be highlighted in the DGN file.



5. From the main MicroStation menu, select **Utilities** > **Key-in** as shown.



6. In the Key-in window, type the command "**ORDER ELEMENT FRONT**" and click the **Run Key-in** button. This will bring all *Cells* and *Text* to the foreground of the MicroStation DGN file and de-select those elements.

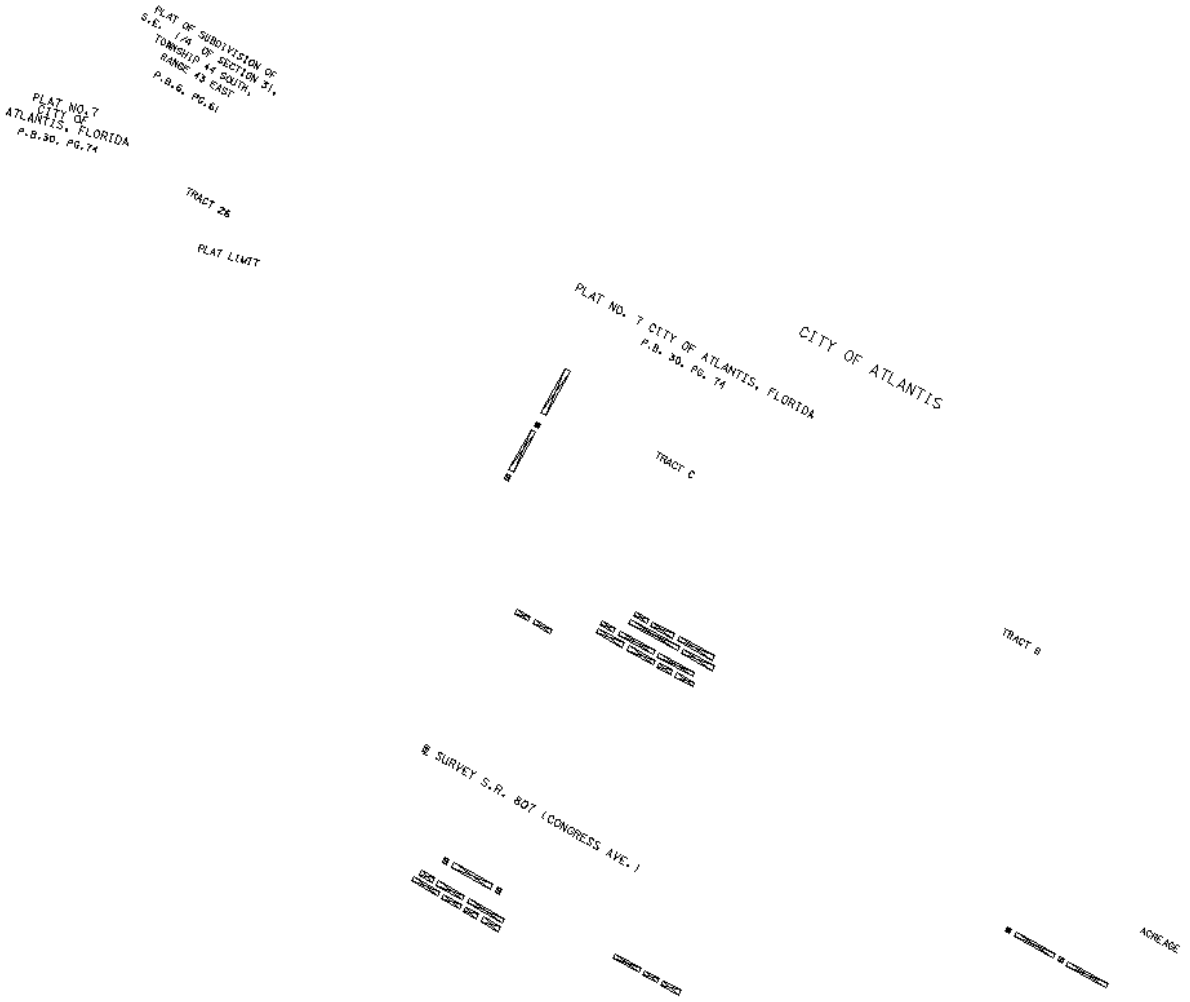


 © 2015 FDOT

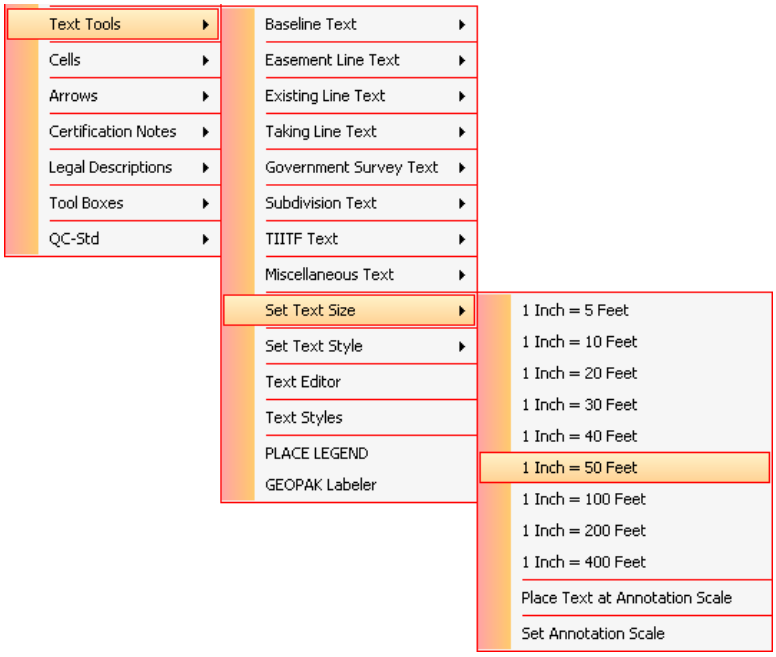
Exercise 9.1 Finish Placing Text

- ***In this exercise the user will finish placing text into the rw1234567.dgn.***

1. Open the DGN file C:\E\Projects\12345678901\rwmap*RW1234567.dgn* and open the **Chapter 9** *Model*. The Right-of-Way map should display as shown next. All Levels have been turned off except for **Level 3**. Level 3 is used as a backdrop for the user to aid in placing the Text elements into the file. If unsure of the proper Text type, the user can Reference the *RW1234567_FINISHED.dgn* from the ***\rwmap*** folder of the project or ask the instructor.

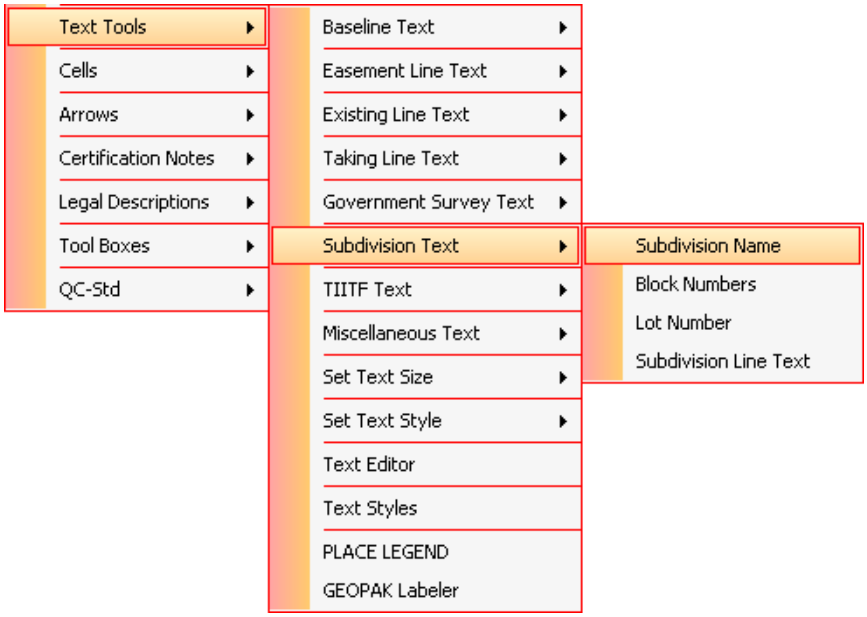


2. It will first be necessary to set the *Text Size* of the Text to be placed into the DGN file. From the Right of Way FDOT Menu, select **Text Tools > Set Text Size > 1 Inch = 50 Feet**. This will set the *Text Size* to **1" = 50'**.



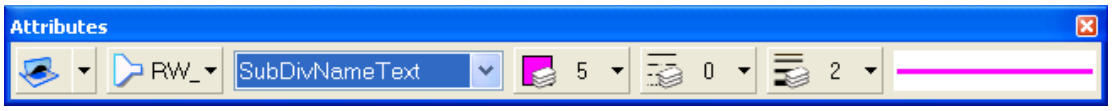
Note Some Districts may use a 1" = 40' scale for their Cells. Remember, the primary concern with RW Maps is readability.

3. From the Right of Way FDOT Menu, select **Text Tools > Subdivision Text > Subdivision Name** text type.

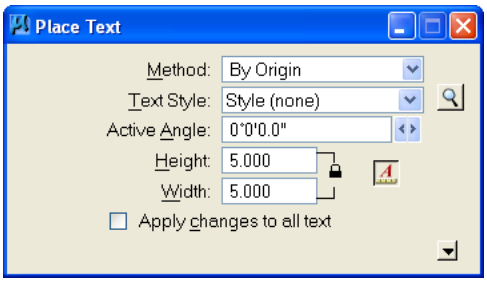


 © 2015 FDOT

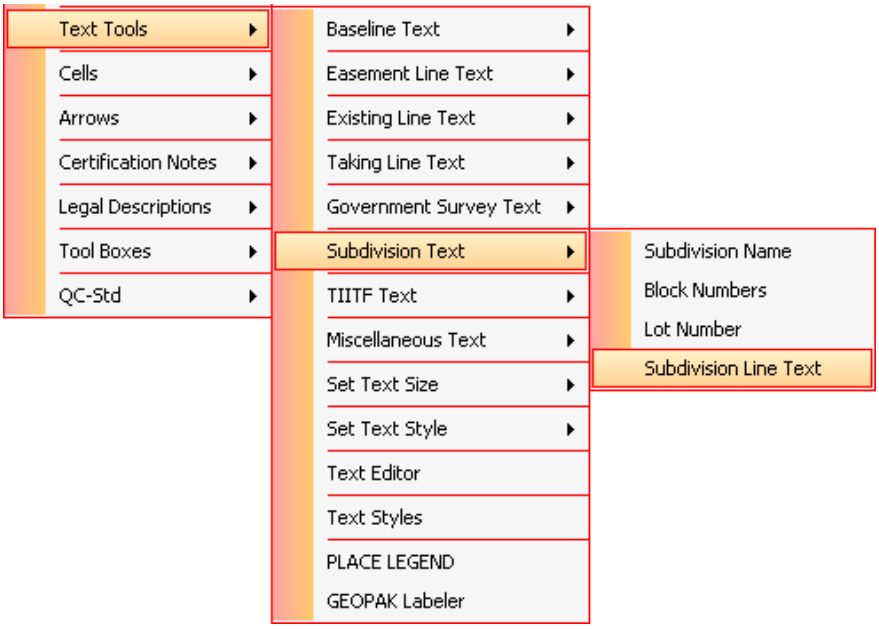
4. This will set the *Text Type* to **Subdivsion Name** and the correct ByLevel symbology will be set as shown in the *Attributes* tool bar.



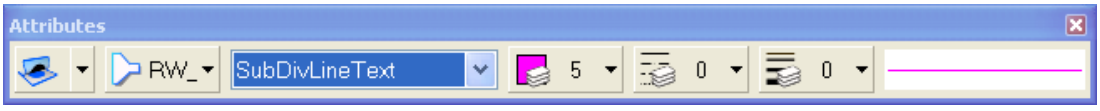
5. Use MicroStation’s **Place Text** tool to place *Subdivision Name Text* in the appropriate places in the DGN file. If unsure of the locations Reference the file *RW1234567_FINISHED.dgn* from the ***\rwmap*** folder of the project or ask the instructor.



6. From the Right of Way FDOT Menu, select **Text Tools** > **Subdivision Text** > **Subdivision Line Text** text type.

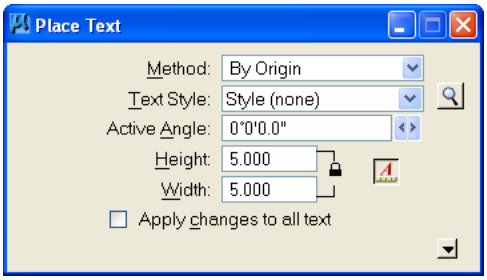


7. This will set the *Text Type* to **Subdivision Line Text** and the correct ByLevel symbology will be set as shown in the *Attributes* tool bar.

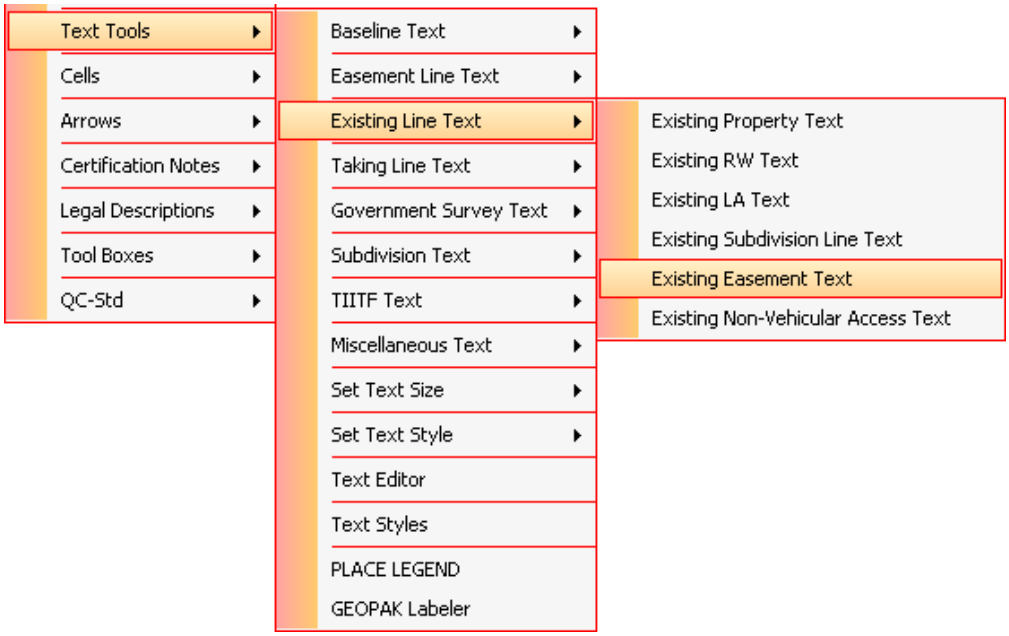


 © 2015 FDOT

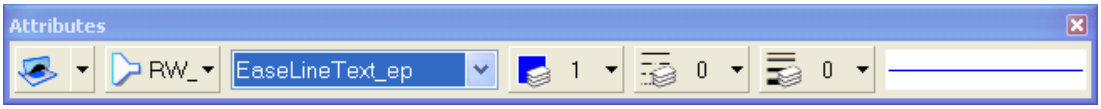
8. Use MicroStation's **Place Text** tool to place *Subdivision Line Text* in the appropriate places in the DGN file. If unsure of the locations Reference the file *RW1234567_FINISHED.dgn* from the ***\rwmap*** folder of the project or ask the instructor.



9. From the Right of Way FDOT Menu, select **Text Tools** > **Existing Line Text** > **Existing Easement Text** text type.

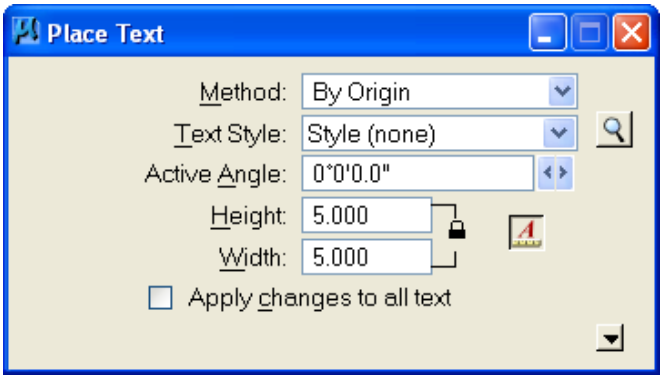


10. This will set the *Text Type* to **Existing Easement Text** and the correct ByLevel symbology will be set as shown in the *Attributes* tool bar.

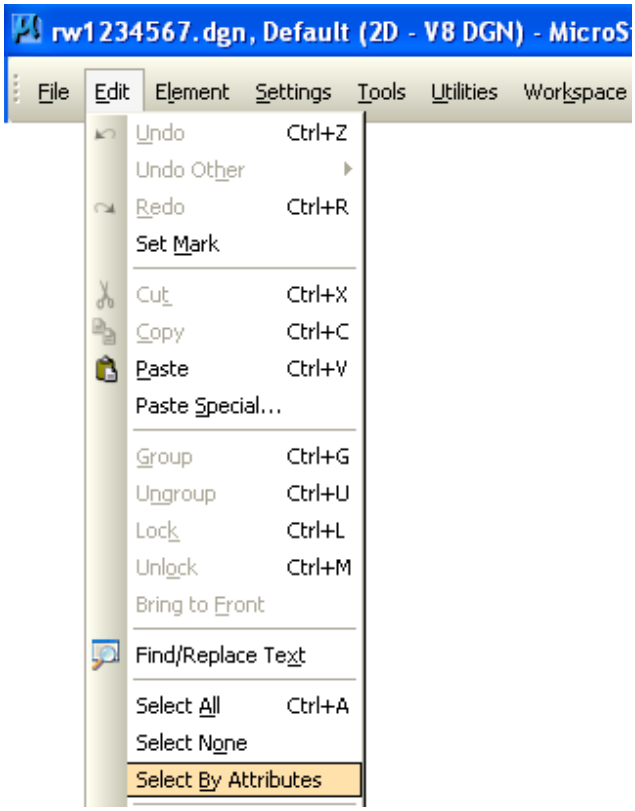


 © 2015 FDOT

11. Use MicroStation’s **Place Text** tool to place *Existing Easement Text* in the appropriate places in the DGN file. If unsure of the locations Reference the file *RW1234567_FINISHED.dgn* from the *\rwmap* folder of the project or ask the instructor.

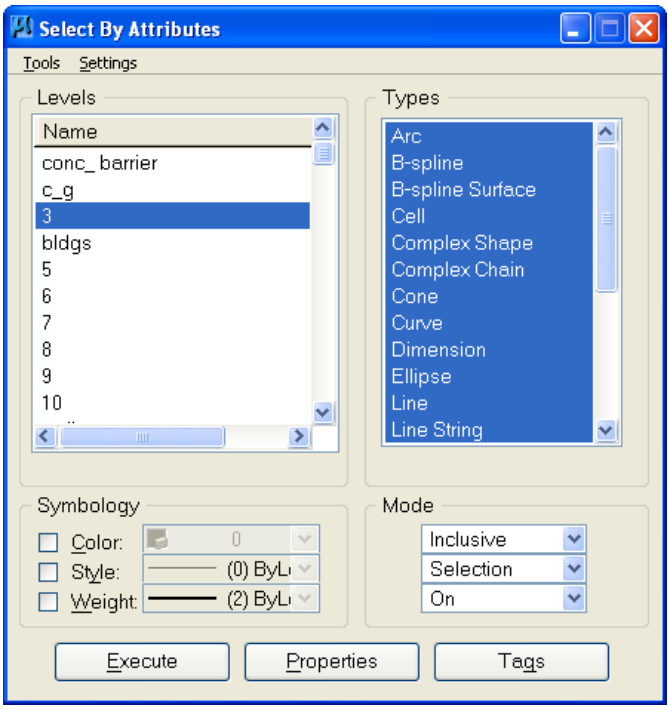


12. Once finished with placing the remaining text elements, select **Element > Select By Attributes** from the main MicroStation menu. This command will be used to delete all elements from **Level 3**.



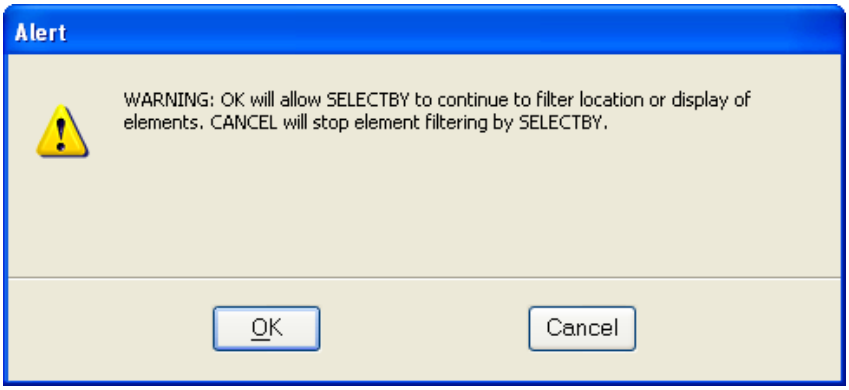
 © 2015 FDOT

13. The Select By Attributes dialog will display as shown next. Click *Level* **3** and then click **Execute** to select ALL element types on *Level 3*.



14. Click MicroStation's **Delete Element** tool to delete all elements on **Level 3** in the DGN file.

15. Close the Select By Attributes dialog and click **Cancel** to the Alert that displays.



 © 2015 FDOT

 © 2015 FDOT

10 RIGHT OF WAY CELL TOOLS

OBJECTIVES

This chapter will review the RW cell tools from MicroStation and the Right of Way FDOT Menu. Items covered will include:

- Cells
- Set Cell Scale
  - Right of Way FDOT Menu Method
  - MicroStation Method
- RW Cell List
- Cell Selection and Placement
  - FDOT Menu Method
  - MicroStation Method
- Place Bar Scale
  - Place Spring Line
- Launch GEOPAK Curve Calculator
- Cell "Masking" and Select By Attributes

INTRODUCTION

As a FDOT Right-of-Way Mapper creates maps, they often have to place multiple instances of symbols into the design file that represent many different objects and mapping symbols. These symbols can be quite complex and actually represent small drawings inserted into the Right-of-Way map. In order to increase efficiency, MicroStation lets the user store such symbols and recall them as needed. These symbols are called Cells and the definition for these cells are stored in files called cell libraries. Cell libraries allow the Right-of-Way Mapper to avoid having to draw each symbol individually. FDOT has created a cell library called *ROW.CEL* that contains cells for the Right-of-Way Mapper. As long as the correct FDOT Seed file (**RWSEED2D.DGN)** has been used in the creation of the design file, the *ROW.CEL* cell library should be automatically attached for use by the user. This chapter concentrates on MicroStation and FDOT Menu methods for the choice, scaling, and placement of FDOT RW cells.

CELLS

In order to get the correct cell display on Right-of-Way maps the cell Size must be set to be equivalent to the final Plot Scale of the DGN file. Methods are available from both the Right of Way FDOT Menu and MicroStation. Both methods will give the same results, but the preferred method for FDOT Right-of-Way Mappers is by using FDOT Menu to set the cell size. Steps for both methods are outlined next.

SET CELL SCALE

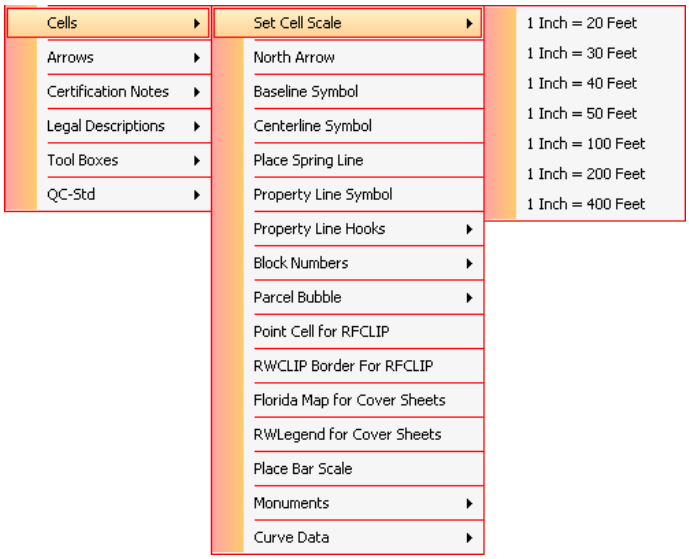
There are several methods that can be used to set the Active Scale to control the cell scale. The cell scale can be set from the Right of Way FDOT Menu or by using one of two native MicroStation methods. Both methods will produce the correct results for the FDOT Right-of-Way Mapper and the choice of methods is left up to the individual user.

RIGHT OF WAY FDOT MENU METHOD

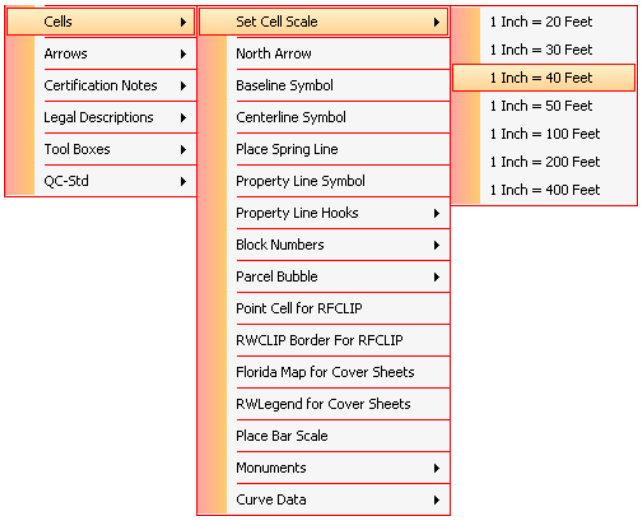
Ideally, the Plot Scale of the Right-of-Way map should be set first and then the cell scale should be set to the same value. For example, if the Plot Scale of the DGN file is set to 1" = 40', the cell scale should be set to 1" = 40' as well. However, to allow additional flexibility to the FDOT Right-of-Way Mapper the cell scale can be set independent from the plot scale.

The steps for setting the cell scale from the Right-of-Way FDOT Menu are shown next:

1. Select **Cells > Set Cell Scale** from the Right of Way FDOT Menu.



2. Select the appropriate *Cell Scale* for the Right-of-Way map. The next example shows a choice of **1 Inch = 40 Feet** for the *Cell Scale*.



 © 2015 FDOT

MicroStation Methods

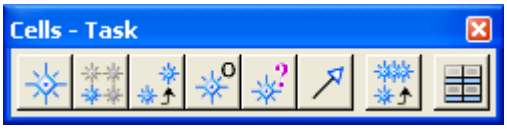
There are two ways to set the cell scale in MicroStation. The first method is to set the **X Scale** and **Y Scale** in MicroStation's **Place Active Cell** dialog. The second method is to use the key-in command **AS=#** where "#" is the Active Scale.

Place Active Cell Method

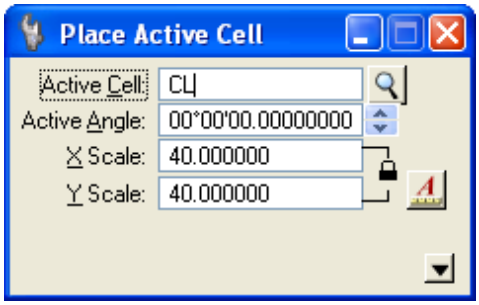
To set the **Cell Scale** from the **Place Active Cell** dialog, the user sets the **X Scale** and **Y Scale**. Although the **X Scale** and **Y Scale** can be set independently, both are typically set to the same value.

The steps for setting the cell scale from the **Place Active Cell** dialog are shown next.

1. Select the **Place Active Cell** icon from MicroStation's *Cells* toolbox.



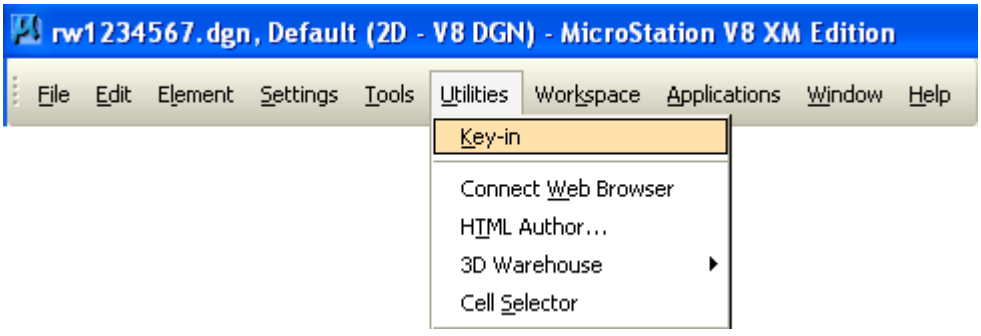
2. In the Place Active Cell dialog, make sure the correct *Active Cell* is chosen and set the *X Scale* and *Y Scale*. The next example shows the choice of the **CL** *Active Cell* at a *Scale* of **1" = 40'**.



Note Methods for selecting the proper cell will be covered later in this chapter.

Active Scale Key-in Method

1. From the main MicroStation menu, select **Utilities** > **Key-in** as shown.



2. In the *Key-in* window, type "**AS=#**" where "#" is the desired *Cell Scale*. The next example shows a *Cell Scale* of **1" = 40'**.

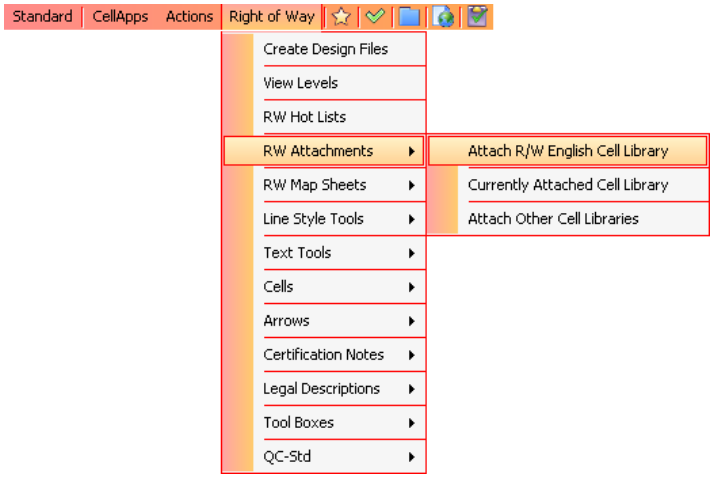
 © 2015 FDOT

RW CELL LIST

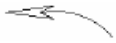
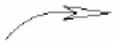
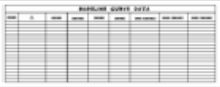
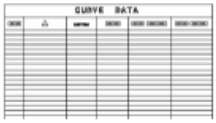
Once the *ROW.CEL* cell library is attached, the FDOT Right-of-Way Mapper will have access to all of the cells that will be needed when producing Right-of-Way maps. If the correct seed file was chosen upon the creation of the MicroStation DGN file, the *ROW.CEL* file should be automatically attached.

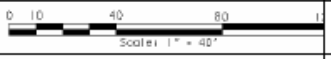
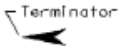
If the *ROW.CEL* cell library is not attached to the design file, the Right-of-Way Mapper can attach the cell library by using FDOT Menu as shown next:

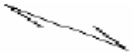
1. From the FDOT Menu, select **Right of Way > RW Attachments > Attach R/W English Cell Library**. The *ROW.CEL* cell library will now be attached to the current design file.



2. A partial list of cells contained in the *ROW.CEL* cell library that are available from the Right of Way FDOT Menu are shown next.

ELEMENT	TYPE	SYMBOL	Macro
ARROW TERMINATOR LEFT (Place on ByLevel of Text Element Relative Toggle "ON")	C = ARRWLG		Place Delineator
ARROW TERMINATOR RIGHT (Place on ByLevel of Text Element Relative Toggle "ON")	C = ARRWRG		Place Delineator
BASELINE CURVE DATA BOX (Used with Geopak Table Tutorial)	C = BLBOX		
BASELINE SYMBOL	C = BL		
CENTERLINE SYMBOL	C = CL		
CONCRETE MONUMENT OPEN	C = MONSQ		
CONCRETE MONUMENT SOLID	C = MONSQS		
CONCRETE R/W MONUMENT (R/W MONUMENTATION MAP)	C = MON		
COORDINATE DATA BOX (Used with Geopak Table Tutorial)	C = COORD		
CURVE DATA BOX (Used with Geopak Table Tutorial)	C = CURBOX		

ELEMENT	TYPE	SYMBOL	Macro
CURVE DATA (English) (Used with Geopak Table Tutorial)	C = CDATA	P.I.STA. Δ = D = T = L = R = P.C.STA. P.T.STA.	
BAR SCALE 1" = 40'	C = BS40		
BAR SCALE 1" = 50'	C = BS50		
BAR SCALE 1" = 100'	C = BS100		
BAR SCALE 1" = 200'	C = BS200		
BAR SCALE 1" = 400'	C = BS400		
LINE TERMINATOR@POINT G = Graphic type cell	C =ARRPG		Place Delineator
LINE TERMINATOR@POINT G = Graphic type cell	C =ARRPG		Place Delineator
NORTH ARROW	C = NOARR		
PARCEL BUBBLE 100	C = PB100		
PARCEL BUBBLE 700	C = PB700		
PARCEL BUBBLE 800	C = PB800		
PARCEL BUBBLE 900	C = PB900		
PERMANENT R/W MONUMENT (R/W MONUMENTATION MAP)	C = PRWM		
PROPERTY LINE HOOK	C = LHOOK		
PROPERTY LINE HOOK	C= PLHTOP		

ELEMENT	TYPE	SYMBOL	Macro
PROPERTY LINE HOOK	C =PLHBOT		
PROPERTY LINE SYMBOL	C = PL		
ROD MONUMENT OPEN	C = MONRD		
ROD MONUMENT SOLID	C = MONRDS		
SEGMENTED CURVE CHORD DIST./BEARING (Used with Geopak Table Tutorial)	C = SEGCUR	Δ = L = R = C.D. = C.B. =	
SPRING LINE (Place on Symbology of Assoc. Element)	C=SPRING		Place SpringLine

© 2015 FDOT

CELL SELECTION AND PLACEMENT

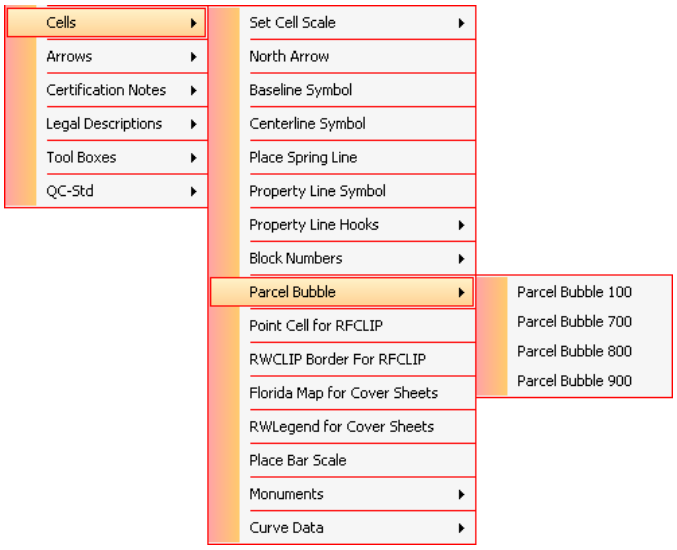
As with most commands, there are a variety of ways to select and place cells into a Right-of-Way map. The preferred way of choosing and placing cells for FDOT Right-of-Way Mappers is to use the **Right of Way FDOT Menu** as that method requires the least number of steps for cell placement. The user can also use MicroStation's **Place Cell** tool to place cells into a Right-of-Way map. Both methods are outlined in the following sections.

FDOT MENU METHOD

Selecting and placing the correct cell using the **Right of Way FDOT Menu** is a very streamlined process. The steps for selecting and placing a cell using the **Right of Way FDOT Menu** are shown next.

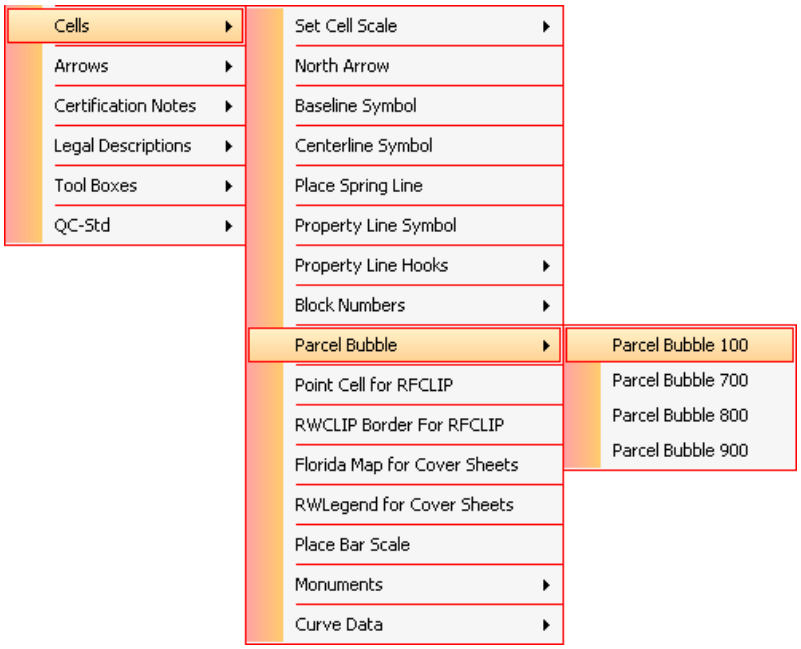
1. Select **Cells** from the **Right of Way FDOT Menu** as shown below.

2. Select the particular cell or cell category. The next example shows the selection of the cell category **Parcel Bubble**.

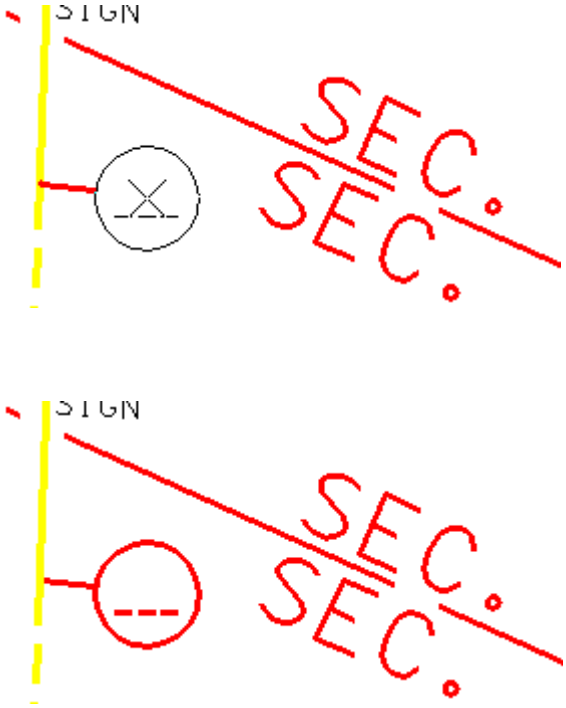


 © 2015 FDOT

3. Select the particular *Cell* to be placed from the cell category chosen. The next example shows the selection of the **Parcel Bubble 100** *Cell*.



4. After the particular cell is selected, it will be attached to the MicroStation cursor at the *Active Scale* of the design file. Move the cursor to the desired cell position and left-click to place the cell into the design file. The chosen cell will remain active until the user either right-clicks to **Reset** the command or selects another command.



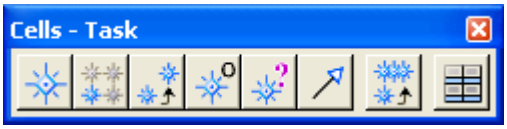
 © 2015 FDOT

MICROSTATION METHOD

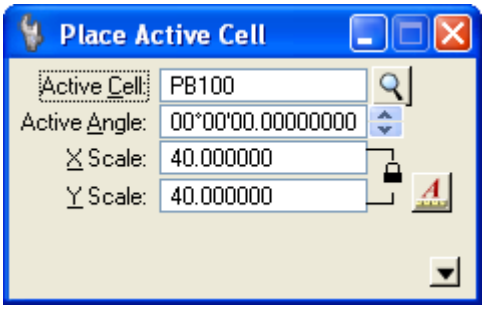
> ***Warning*** *This method does not set the correct ByLevel for the cell to be placed. The FDOT RW Mapper should use the* ***Right of Way FDOT Menu****.*

To select and place a cell in to a Right-of-Way map using MicroStation, the FDOT Right-of-Way Mapper can use the **Place Cell** tool from the **Cells** toolbar. The steps for choosing and placing a cell using the **Place Cell** tool are outlined next.

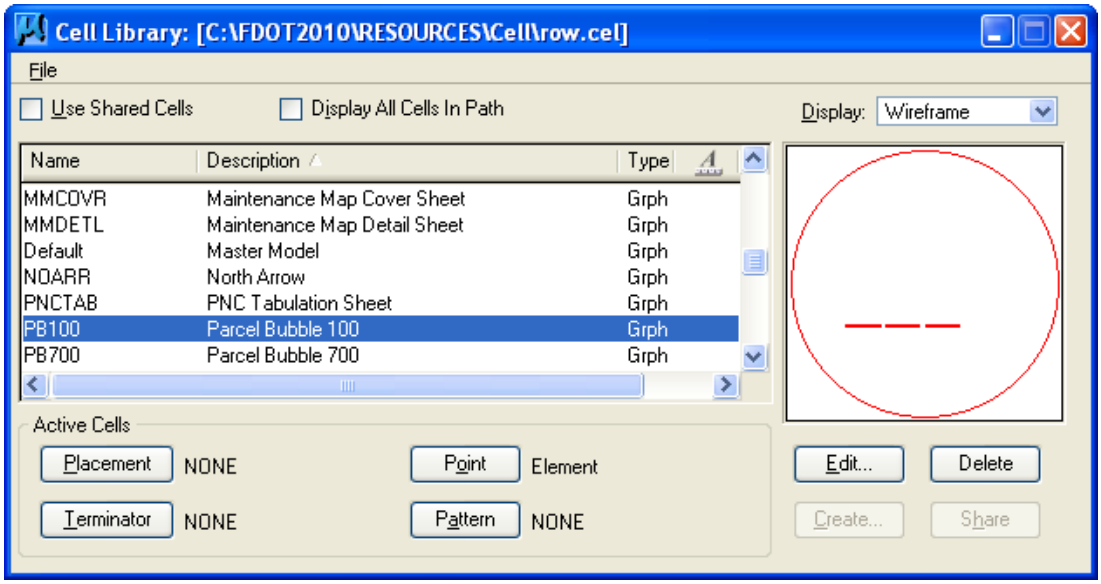
1. Select the **Place Cell** icon from MicroStation's *Cells* toolbar.



2. The Place Cell dialog is displayed and shows the currently *Active Cell*, *Active Angle*, *X Scale*, and *Y Scale.* Make sure that the *X & Y Scales* are set to match the *Plot Scale* of the design file.

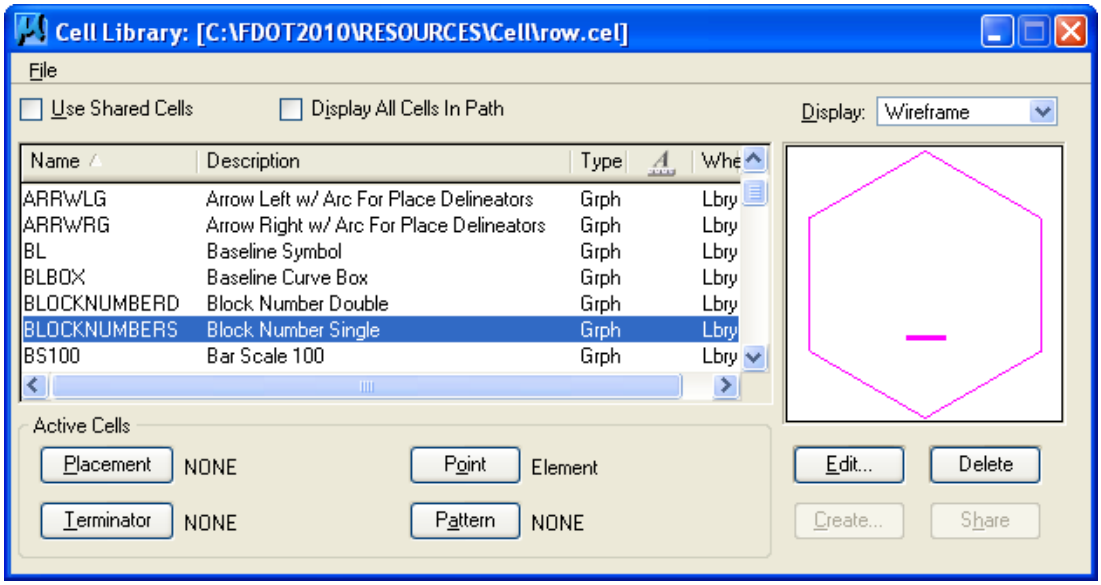


3. To select the *Cell* to place in the design file, either type the cell or click the **Browse Cell(s)** icon. This will open the currently attached *Cell Library*.

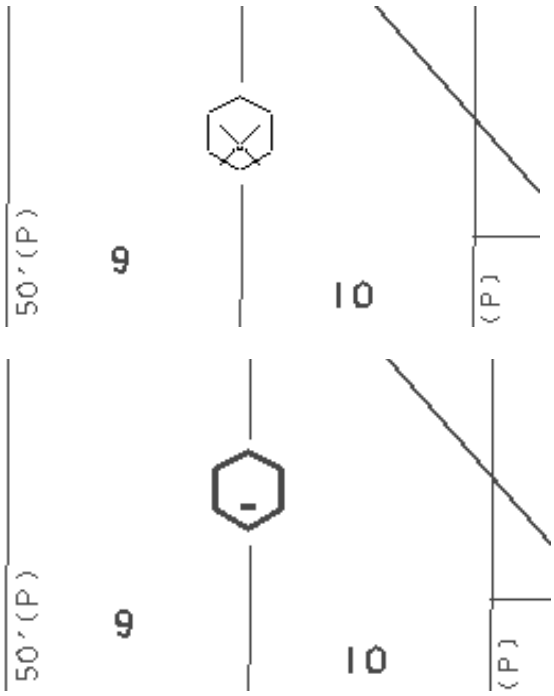


 © 2015 FDOT

4. From the Cell Library dialog, left-click to highlight the desired cell and then click the **Placement** button. Alternatively, the user can simply double-click on the desired cell. The next example shows the selection of the **BLOCKNUMBERS** cell.



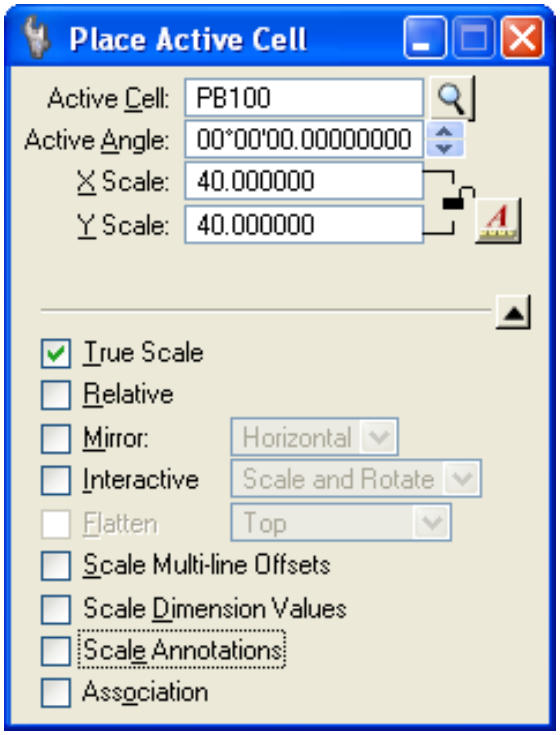
5. After the particular cell is selected, it will be attached to the MicroStation cursor at the **Active Scale** of the design file. Move the cursor to the desired cell position and left-click to place the cell into the design file. The chosen cell will remain active until the user either right-clicks to Reset the command or selects another command.



Note The following steps are optional and not normally needed by the Right-of-Way Mapper.

 © 2015 FDOT

6. Clicking the Expand icon will show other available cell options. These options are explained next.

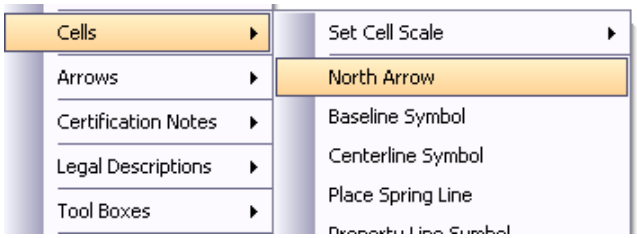


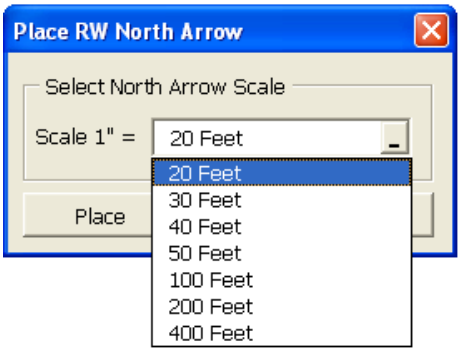
- **True Scale -** If on, cells that were created in a model with different units from those of the active model are scaled to adjust them to the units of the active model.
- **Relative On -** If the active cell is a graphic cell (all FDOT cells are graphic cells) the behavior is as follows:
- The cell is placed on the currently active ByLevel Symbology without regards to the original ByLevel Symbology with which the cell was created.
- **Relative Off -** The cell is placed using the ByLevel Symbology with which the cell was originally created. **This is the correct setting for FDOT RW Mappers.**
- **Interactive -** If on, the scale and rotation angle are defined graphically by data points.
- **Flatten -**If on, 3D cells can be flattened, or projected, on to one of the standard view projections - Top, Front, Right, Isometric, Bottom, Back, Left, Right Isometric, which is selected from the option menu. Lets you place a view of a 3D cell into a 2D model.
- **Scale Multi-line Offsets -** If on, applies the active scale to multi-line offsets.
- **Scale Dimension Values -** If on, applies the active scale to dimension values.
- **Scale Annotations -** If on, applies the active scale to elements that are scaled by annotation scale.
- **Association -** If on, lets the user associate cells to elements in the model.

 © 2015 FDOT

NORTH ARROW

This command automates the process of placing a north arrow. The English cell library row.cel must be attached to the current design file. The program will prompt the user if it cannot find the required cell library.



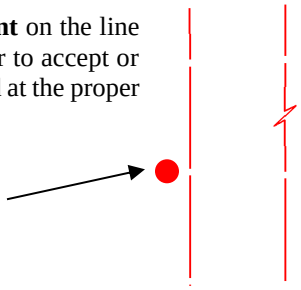


PLACE SPRING LINE (MACRO)

The **Place Spring Line (Macro)** is the preferred way to place Spring Lines because the command provides tools for matching the Spring Line symbology to the line element and for setting the Spring Line scale. When using this command, it is not necessary that the Plot Scale and cell Scale are already set for the design file.

The R/W Mapping Spring Line command automates the process of placing a spring line for lines that are partially deleted in order to fit mapping area limits. The English cell library row.cel must be attached to the current design file. The program will prompt the user if it cannot find the required cell library.

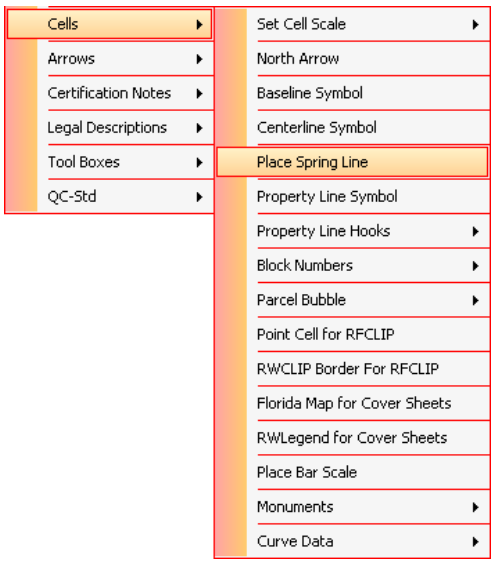
- *Match Line Symbology* – R/W Mapping standards require that spring lines be placed using the same line symbology for the line type being used. The button will prompt the user to select the associated line and will set the required symbology in MicroStation.
- *Scale 1"* – Sets the required scale for R/W Mapping standards for placement of the spring line.
- *Keyin* – setting can also be selected from the pull down list and a non-standard scale keyed into the text window.
- *OK* – After selecting, the program will prompt for a **Tentative Data Point** on the line and at the point to place the spring line. The program will prompt the user to accept or reject the point. If a second data point is given the spring line will be placed at the proper angle and location as shown below.



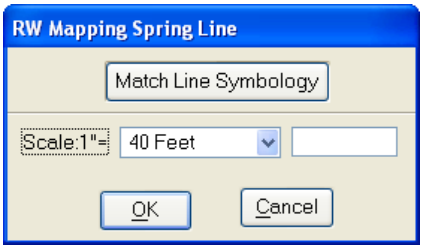
 © 2015 FDOT

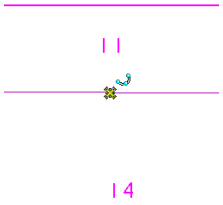
The steps for using the **Place Spring Line (Macro)** command are shown next.

1. Select Cells > Place Spring Line from the Right of Way FDOT Menu.

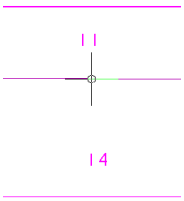


2. This will open the **RW Mapping Spring Line** macro dialog. Set the desired Scale by using the pull-down or key-in a particular Scale into the text field of the dialog. Next, click the **Match Line Symbology** button and then double-click to Select and then Accept the symbology of the line element in which to place the **Spring Line**. Click again in a blank area of the screen to redisplay the **RW Mapping Spring Line** macro.

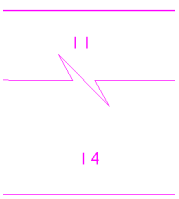




3. Click **OK** and then place a Tentative Data Point along the linear element at the desired location of the **Spring Line**.



4. Double-click to Accept the Tentative Data Point and then place the Spring Line into the linear element.



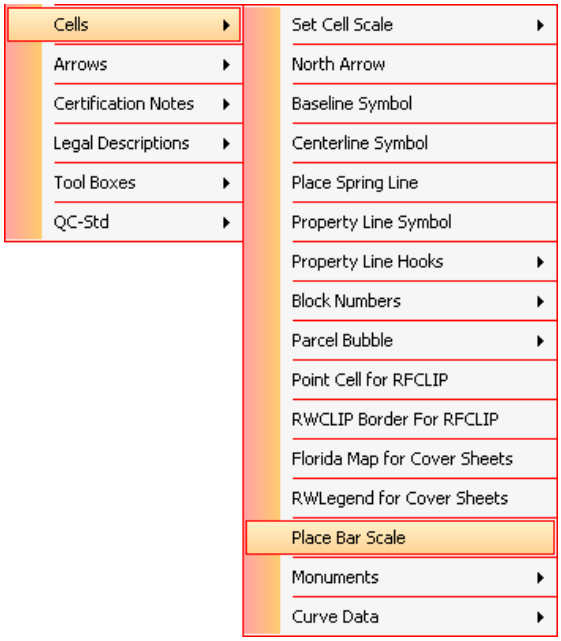
© 2015 FDOT

PLACE BAR SCALE

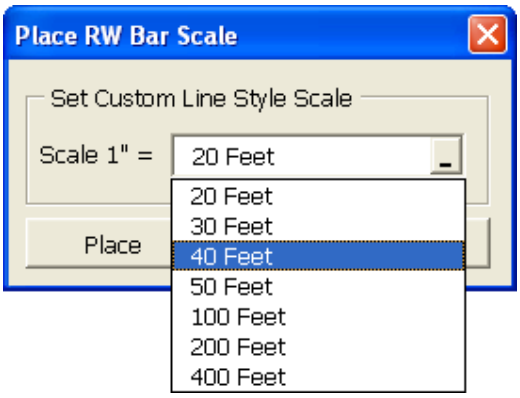
This command opens the **R/W Mapping English Bar Scales** dialog which displays the list of available standard Bar Scales. Once the desired Bar Scale is selected and the **OK** button pressed the bar scale cell will be attached to the cursor for placement.

Steps for using the **R/W Mapping English Bar Scales** tool are shown next.

1. Select **Cells > Place Bar Scale** from the Right of Way FDOT Menu.



2. The R/W Mapping English Bar Scales dialog will open. Select the desired *Bar Scale* and then click **OK**. The next example shows a Bar Scale choice of *Barscale* **1" = 40'**.

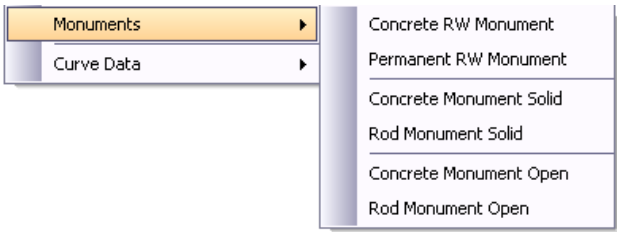


3. Once the **OK** button is clicked the desired Bar Scale will be attached to the MicroStation cursor. Place the MicroStation cursor at the proper location in the design file and then left-click to **Accept** the location.

 © 2015 FDOT

MONUMENTS

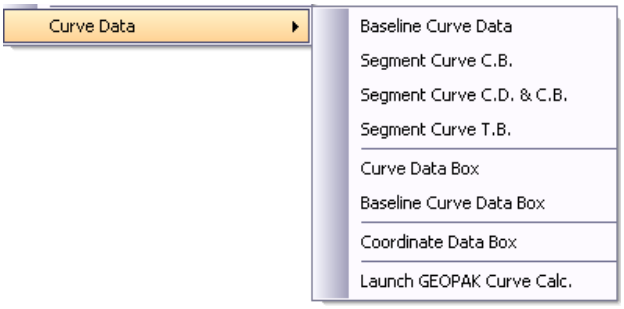
This option provides access to all monument cells created in the English libraries. Monument cells that are described as **Solid** are area filled and require the MicroStation **Settings > View Attributes** "Fill" selection be turned on for proper display.



CURVE DATA

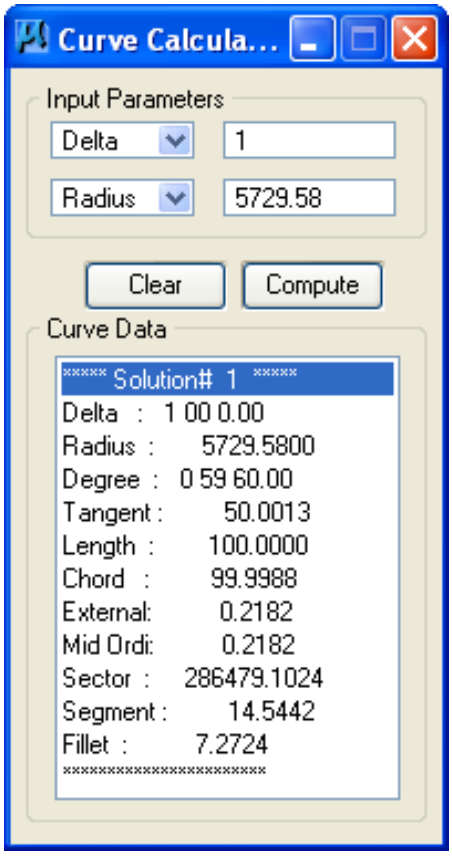
Contains all cells used for creating full curve data layout or segment curve data. Baseline Curve Data, Segment Curve C.B. (C.B. = Chord Bearing),

Segment Curve C.D. &C.B. (C.D. &C.B. = Chord Distance and Chord Bearing) and Segment Curve T.B. (T.B. = Tangent Bearing) are the basic curve data information required for R/W Mapping.



Each of these cells is used in association with the Geopak Table-Tutorial program including the Curve Data Box, Baseline Curve Data Box and Coordinate Data Box.

- *Launch Geopak Curve Calc* – It's the Geopak curve data application that provides quick curve data calculations for reviewing curve data information. The program requires at least two curve elements for computing the curve data as provided in the two pull down selection lists. The program will also maintain each Computed solution (Solution#1, Solution#2 …) until the Clear button is selected. This curve data is for informational review only and cannot be placed into the design file.



 © 2015 FDOT

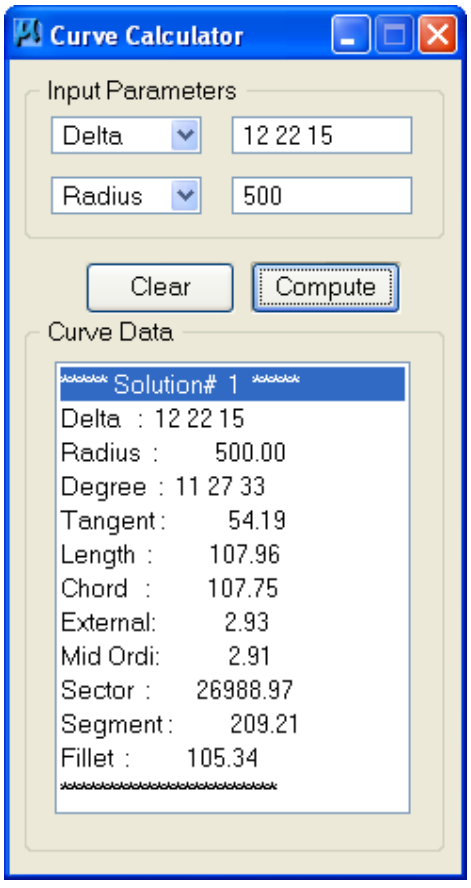
LAUNCH GEOPAK CURVE CALCULATOR

The Geopak curve data application provides quick curve data calculations for reviewing curve data information. The program requires at least two curve elements for computing the curve data as provided in the two pull down selection lists. The program will also maintain each Computed solution until the **Clear** button is selected. This curve data is for informational review only and cannot be placed into the design file.

The steps for accessing and using the GEOPAK Curve Calculator are shown below.

1. From the FDOT Menu, select **Right of Way > Cells menu > Curve Data > Launch GEOPAK Curve Calc.**

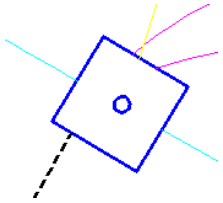
2. The GEOPAK Curve Calculator dialog will display. Click the pull-down arrows to select two known curve elements. The next example shows the two unknown curve parts as **Delta** and **Radius**. The **Delta = 12° 22' 15"** and the **Radius = 500'**. Click the **Compute** button to display the curve information in the **Curve Data** section of the dialog. Clicking **Clear** will clear the **Curve Data** section of the dialog.



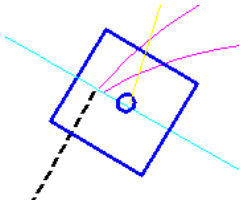
 © 2015 FDOT

CELL "MASKING" AND SELECT BY ATTRIBUTES

In MicroStation XM, FDOT RW Mappers are able to take advantage of the ability to have cells with a background color (usually black). This eliminates the need to partially delete linear elements in order to have cells display correctly without the intrusions of the of the linear elements themselves. An example of this is shown below.



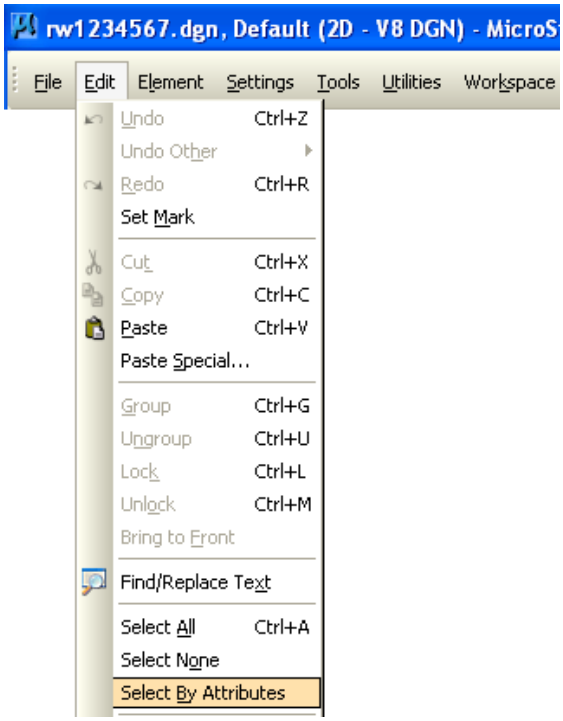
However the correct display of cells with background is dependent upon the cells being drawn into the DGN file AFTER the linear elements. If the cells are drawn into the DGN file BEFORE the linear elements OR the linear elements are drawn ON TOP OF the cell, the display is as show below.



To eliminate this problem, the RW Mapper should develop the habit of using the MicroStation command **Select By Attributes** in conjunction with the key-in command **ORDER ELEMENT FRONT** in order to bring cells (and text) elements into the foreground before plotting.

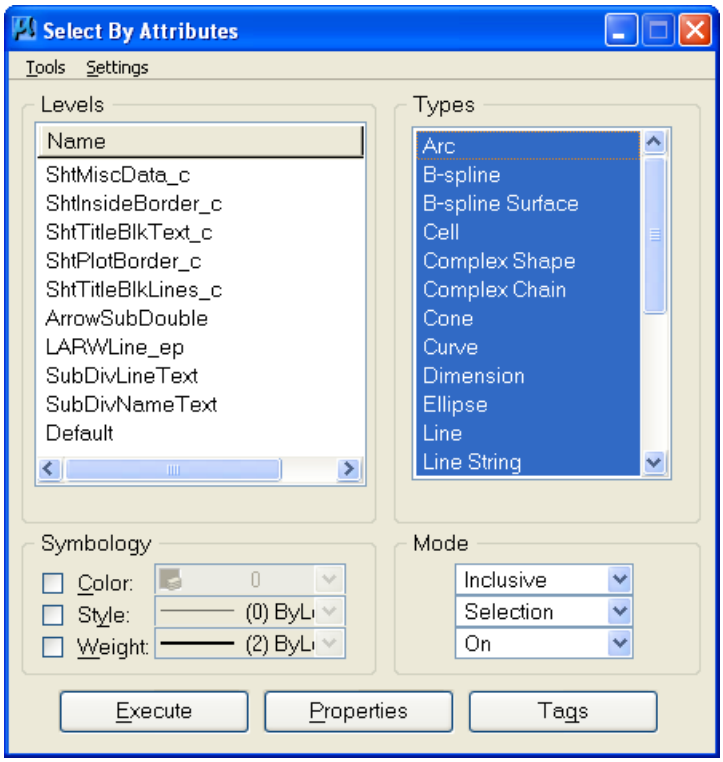
The procedure for this is shown in the steps below.

1. From the main MicroStation menu, select **Edi t > Select By Attributes**.

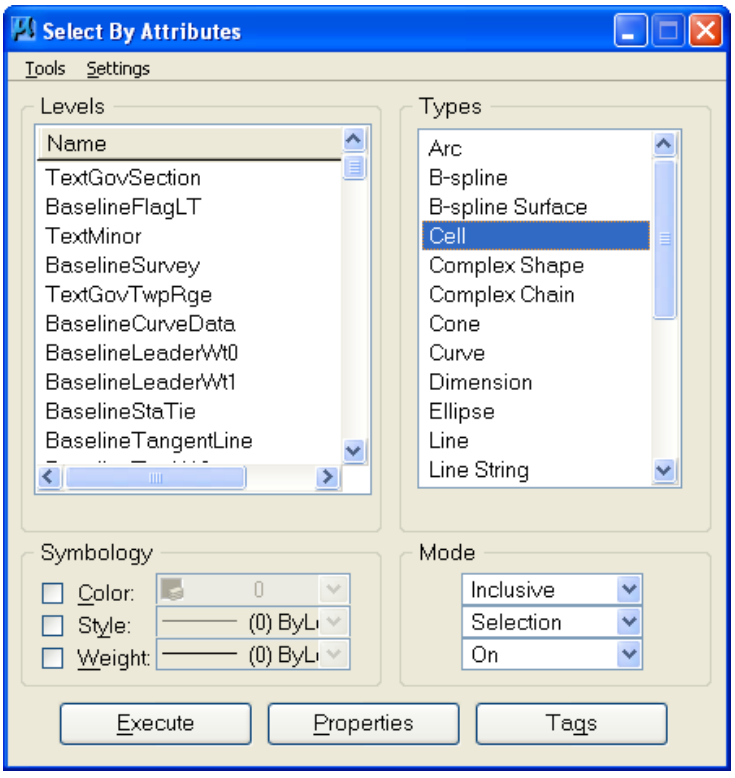


 © 2015 FDOT

2. This will display the Select By Attributes dialog.

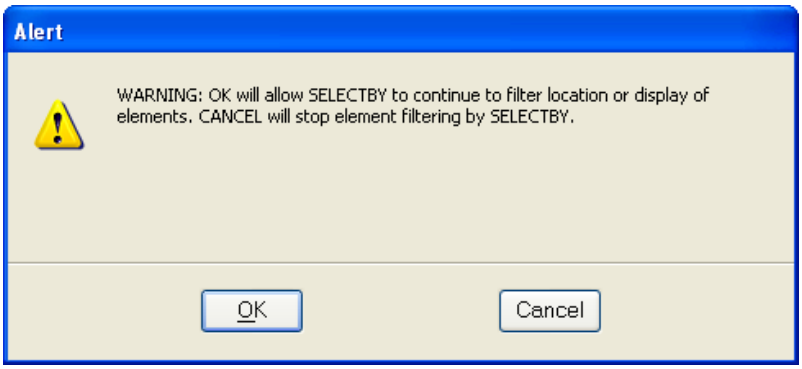


3. From the Select By Attributes dialog, select the *Types of Cell* and *Text* and then click **Execute**. This will select and highlight all Cells and Text in the current DGN file.

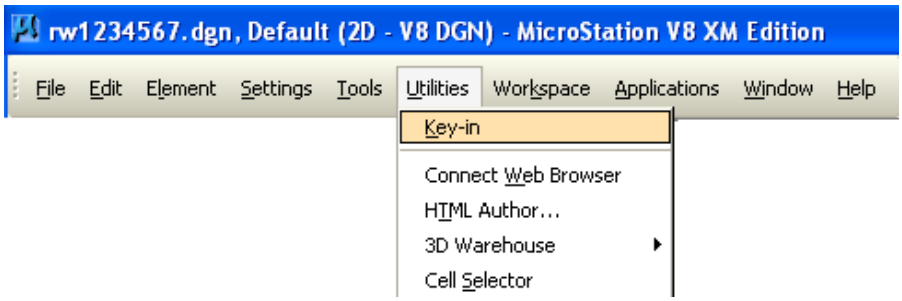


 © 2015 FDOT

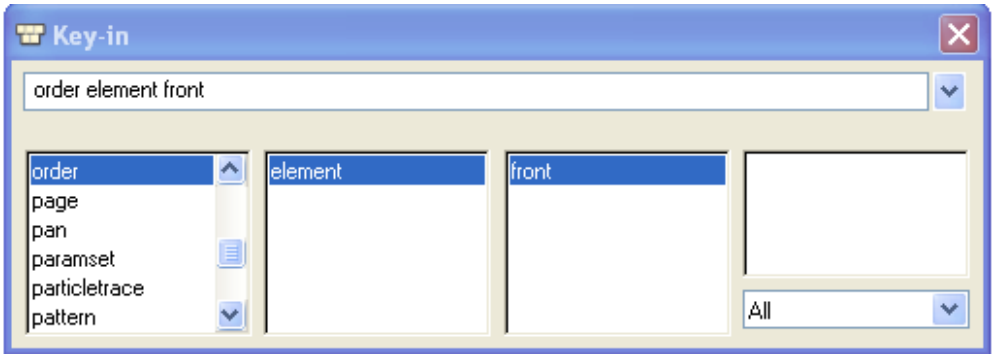
4. Close the Select By Attributes dialog and click **Cancel** to the Alert that is displayed. The selected elements will still be highlighted in the DGN file.



5. From the main MicroStation menu, select **Utilities** > **Key-in** as shown below.



6. In the Key-in window type the command "**ORDER ELEMENT FRONT**" and click the **Run Key-in** button. This will bring all Cells and Text to the foreground of the MicroStation DGN file and de-select those elements.

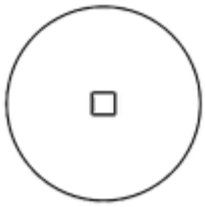


 © 2015 FDOT

Exercise 10.1 Finish Placing Cells

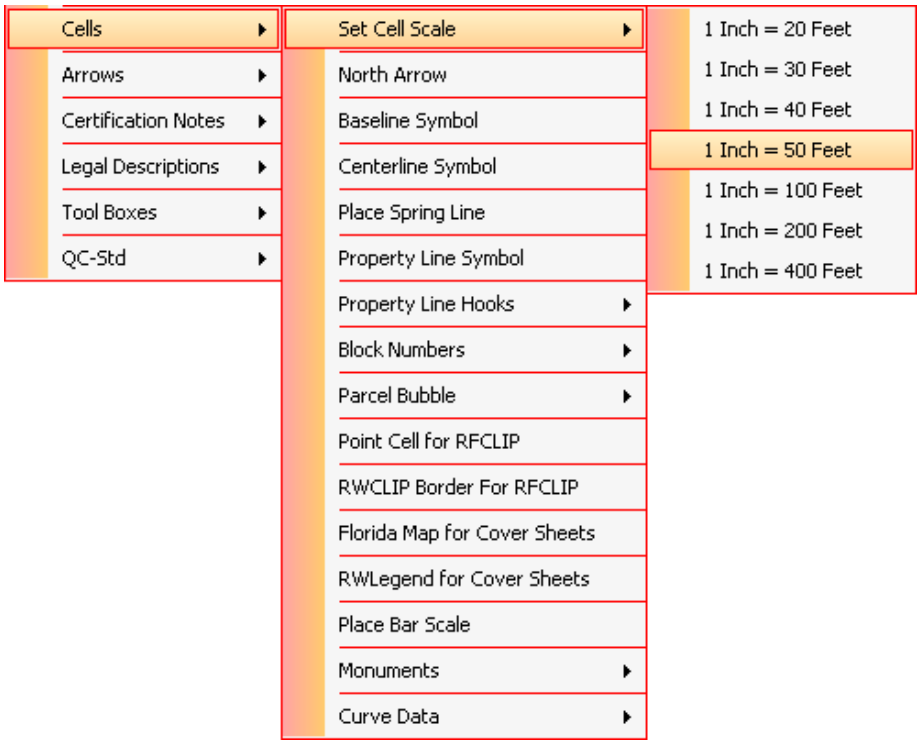
➢ ***In this exercise the user will finish placing cells into the rw1234567.dgn.***

1. Open the DGN file C:\E\Projects\12345678901\rwmap*RW1234567.dgn***.** Open the **Chapter 10** *Model* for this exercise. The Right-of-Way map should display as shown below. All Levels have been turned off except for **Level 3**. Level 3 is used as a backdrop for the user to aid in placing the Cells into the file. If unsure of the proper Cell type, the user can Reference the *RW1234567_FINISHED.dgn* from the ***\rwmap*** folder of the project or ask the instructor.



Note The file should initially open to the Saved View **Cells1** which is shown above. To aid the user, three other Saved Views have been created: **Cells2-4**.

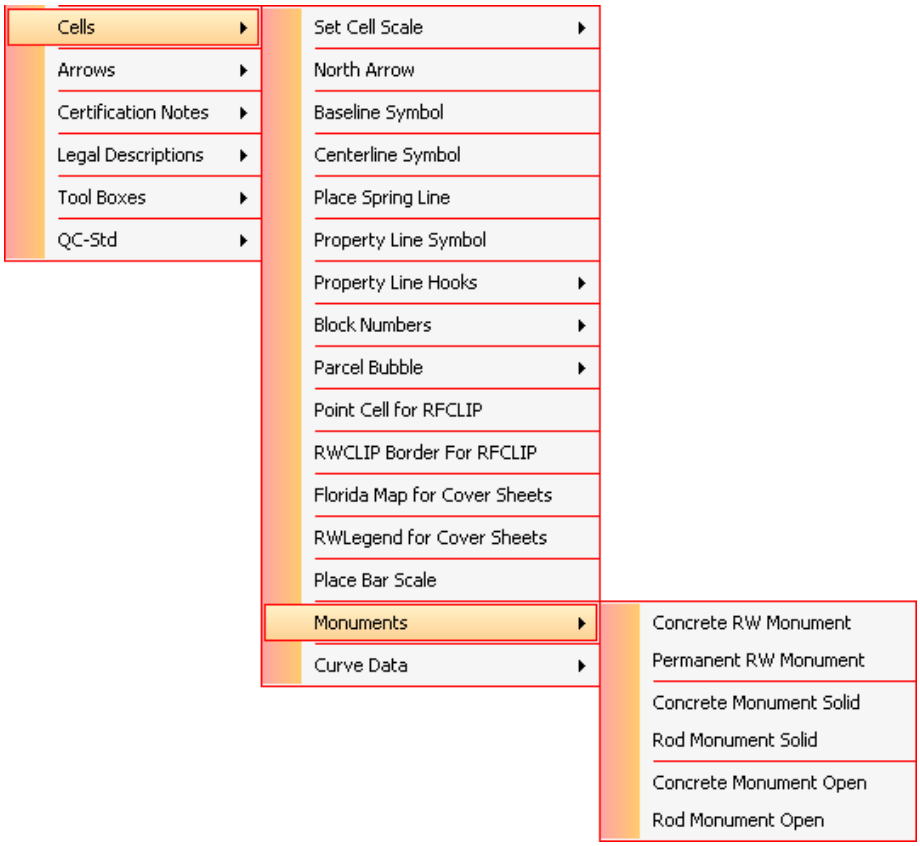
2. It will first be necessary to set the *Cell Scale* of the Cells to be placed into the DGN file. From the Right of Way FDOT Menu, select **Cells** > **Set Cell Scale** > **1 Inch = 50 Feet**. This will set the *Cell Scale* to **1" = 50'**.



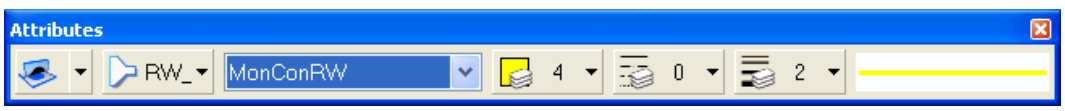
Note Some Districts may use a 1" = 40' scale for their Cells. Remember, the primary concern with RW Maps is readability.

 © 2015 FDOT

3. From the Right of Way FDOT Menu, select **Cells** > **Monuments** menu to select the correct cell type to replace the cells on Level 3. Use the **Saved Views** as needed to move the view to the various sections of the DGN file. A screen shot of the RW Monument Cells is shown below to help guide the user when replacing the Cells on Level 3.

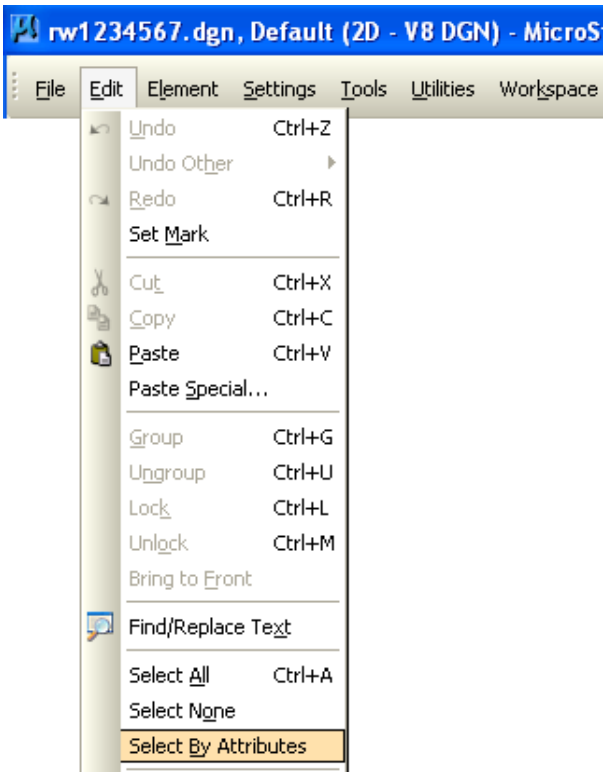


4. As each Monument Cell is chosen, the RW FDOT Menu will activate the proper Cell and set the correct ByLevel symbology for the placement of the Cell. Below the *Attributes* tool bar is shown after selecting the **Concrete R/W Monument** Cell.

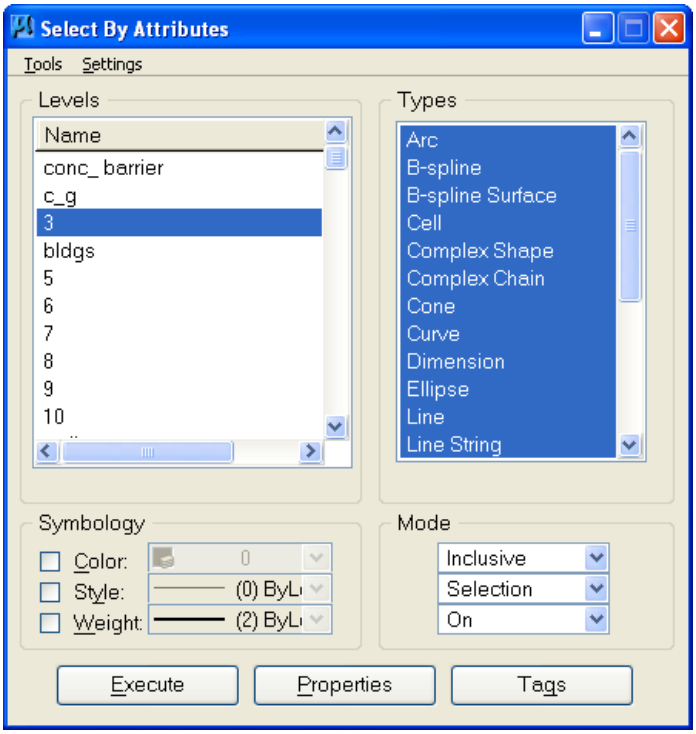


 © 2015 FDOT

5. Once finished with placing the remaining Cells, select **Element > Select By Attributes** from the main MicroStation menu. This command will be used to delete all elements from **Level 3**.



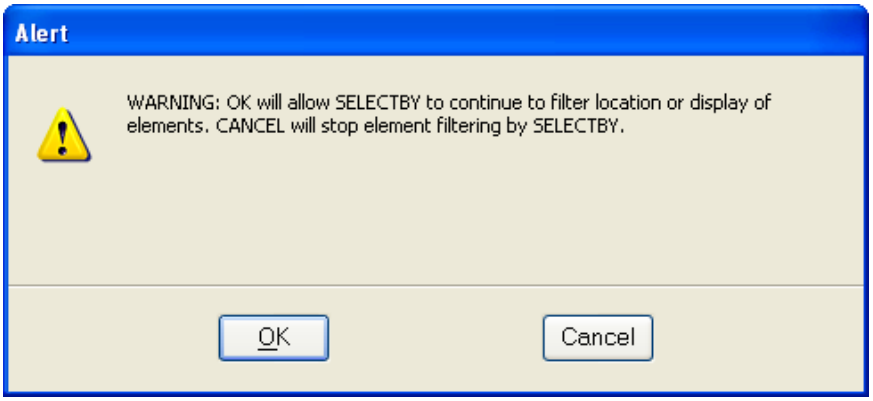
6. The Select By Attributes dialog will display as shown below. Click *Level* **3** and then click **Execute** to select ALL element types on **Level 3**.



 © 2015 FDOT

7. Click MicroStation’s **Delete Element** tool to delete all elements on **Level 3** in the DGN file.

8. Close the Select By Attributes dialog and click **Cancel** to the Alert that displays.



 © 2015 FDOT

11 RIGHT OF WAY ARROW TOOLS

OBJECTIVES

This chapter will review the RW Arrow tools from MicroStation and the Right of Way FDOT Menu. Items covered will include:

- RW Custom Line Styles With Arrows
- Set Custom Line Style Scale
    - Right of Way FDOT Menu Method
- Place Delineators
- Review RW Arrow Types
- Review RW Terminator Types

INTRODUCTION

When creating FDOT Right-of-Way maps, it is necessary to use Arrows to clearly show the extent of dimensions in the design file. Previous versions of MicroStation and FDOT Menu required the Right-of-Way Mapper to place many of these dimensioning elements separately. The initial placement consumed a lot of time and any necessary editing required changes to multiple elements. In MicroStation XM, FDOT has created a variety of Custom Line Styles that included built in delineators called Arrows. This allows the FDOT Right-of-Way Mapper to place dimensioning elements in one step.

This chapter concentrates on MicroStation and FDOT Menu methods for the choice, scaling, and placement of FDOT RW Arrows.

RW CUSTOM LINE STYLES WITH ARROWS

RW Arrows are part of a Custom Line Style. Therefore, a short review of Custom Line Styles from Chapter 6 is included in this section.

Custom line styles have the same characteristics as standard MicroStation line codes and can be set as the active line style using the "LC=" key in. For English units, "RWLINENG.RSC" contains all of the RW Custom Line Styles at a 1:1 scale. The size of the terminator arrows is controlled by the Custom Line Style Scale setting of the design file.

A partial listing of the FDOT Custom Line Styles containing Arrows for Right-of-Way Mappers displays next.

NAME	SYMBOL
LEADERLT – Leader Left	
LEADERRT – Leader Right	
LICENSE – License	
LOC - Limits of Construction	
NONVH - Non-Vehicular Access Line	
NSPF - Nat./State Park/Forest	
NSPF2 – Nat./State Park/Forest (Hash Only)	
PESMT - Perpetual Ease.	
QSEC - ¼ Section Line	
RR - Railroad	
RW - Proposed R/W	
SECLIN - Section Line	
STL - State Line	
SUBDIV – Subdivision Arrow	
SUBDIV2 – Arrows2	
SUBDIV2LT – Arrows 2 LT.	
SUBDIV2LTOnly – Arrows 2 LT.	
SUBDIV2RT – Arrows 2 RT.	
SUBDIV2RTOnly – Arrows 2 RT. Only	
TEMPE -Temporary Easement	
TWPRGE -Township/Range	

© 2015 FDOT

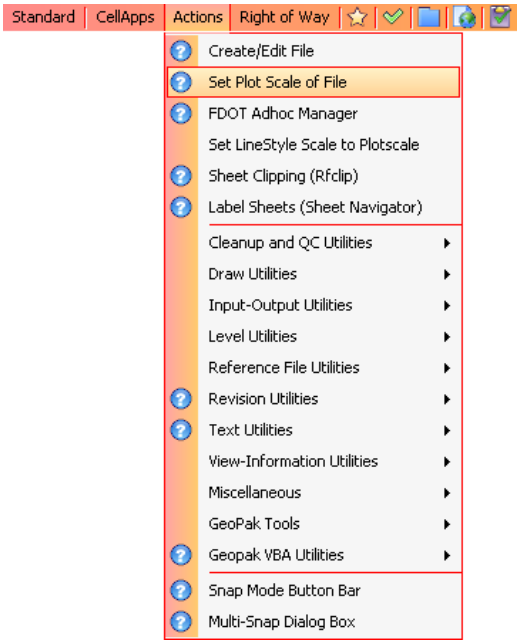
SET CUSTOM LINE STYLE SCALE

In order to achieve the correct display for custom line styles in a Right-of-Way map file, the user needs to set the custom line style scale to match the intended Plot Scale of the DGN file. The user can perform this function from either the Right of Way FDOT Menu or from native MicroStation commands. The Right of Way FDOT Menu methods as well as both MicroStation methods will produce the same result. Which method to use is left up to the individual Right-of-Way Mapper.

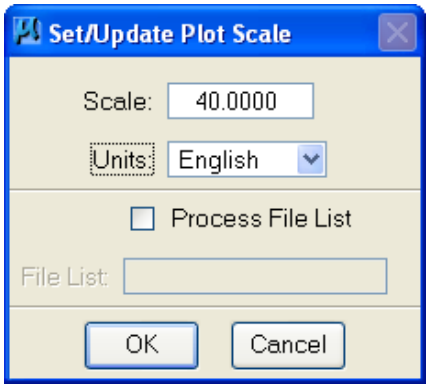
FDOT MENU METHOD

If the plot scale for a DGN file is not set, setting the correct custom line style scale from the Right of Way FDOT Menu is a two step process. If the plot scale is already set for the DGN file, the user can go directly to Step #3. Steps are next for the entire process.

1. Set the *Plot Scale* of the currently open DGN file by selecting **Actions** > **Set Plot Scale of File**.



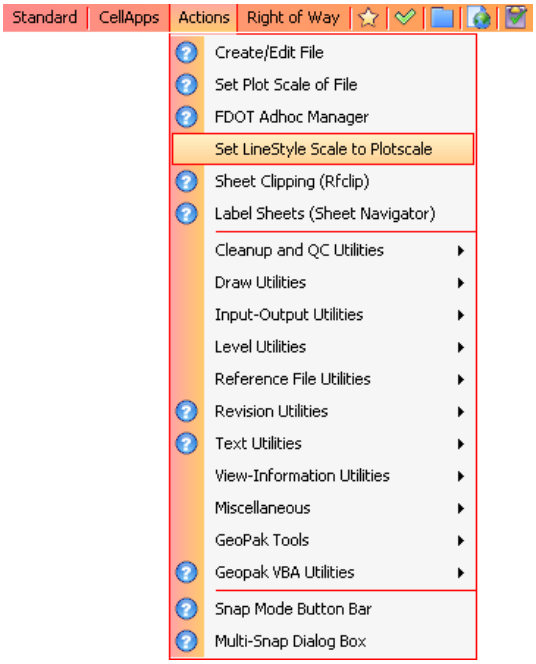
2. This will bring up the **Set/Update Plot Scale** dialog. From here, the user will select the correct **Scale** and **Units** for the DGN file and then click **OK**.



Note Populating the Process File List check box allows users to set the plot scale for all models in a single or multiple design files. To process all models in a single design file, type in the name of the design file in the File List text field. Use wild cards to process all models in multiple design files. For example, type rwdetl*.dgn in the File List text field, to process all Right-of-Way Detail sheets in the working directory. Likewise, type *.dgn, to process all design files in the working directory. Once the File List is specified, click OK to process the design file(s).

 © 2015 FDOT

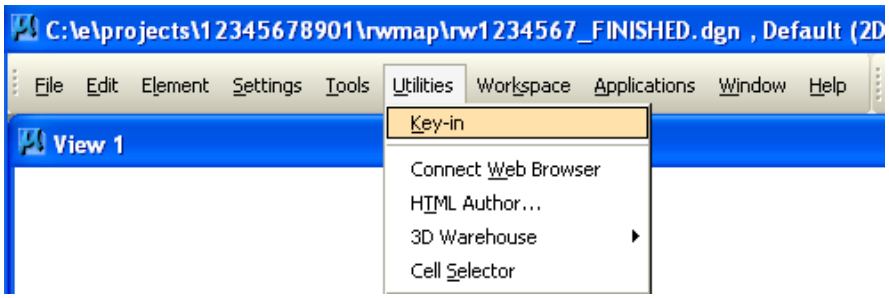
3. From the Right of Way FDOT Menu, select **Utils > Set LineStyle Scale to Plotscale**. This will set the custom line style scale for all custom line styles to the plot scale of the current DGN file.



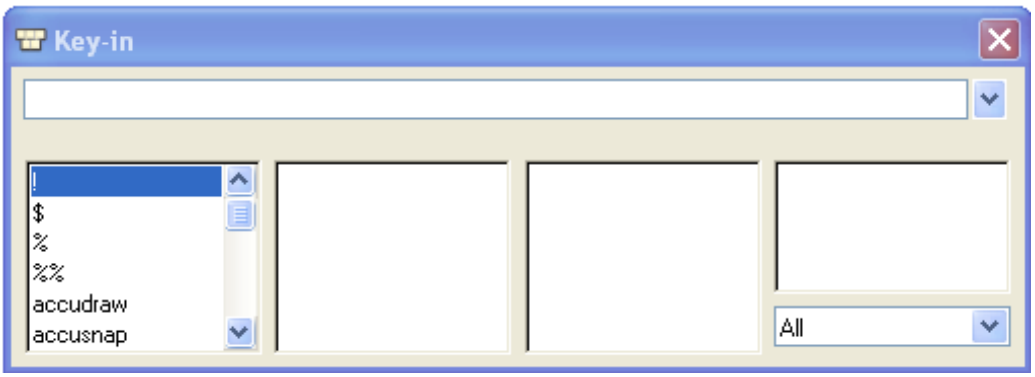
MICROSTATION KEY-IN METHOD

Another way to change the scale factor for custom line styles using MicroStation is through the **Key-in** dialog. Although this method is not as widely used, the resulting Custom Line Style Scale will be the same. The steps for this method are shown next.

1. Select **Utilities > Key-in** from the MicroStation pull-down menu.

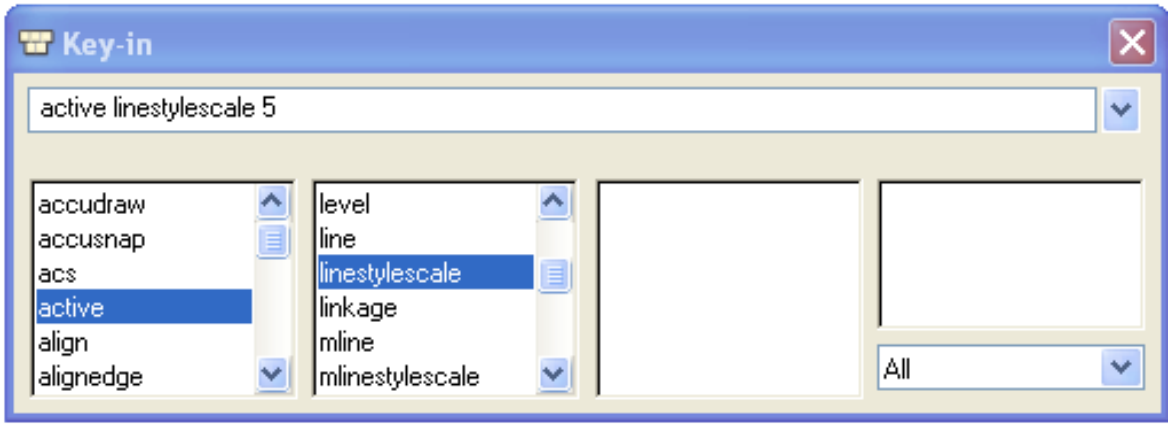


2. This will activate MicroStation's Key-in dialog as shown next.



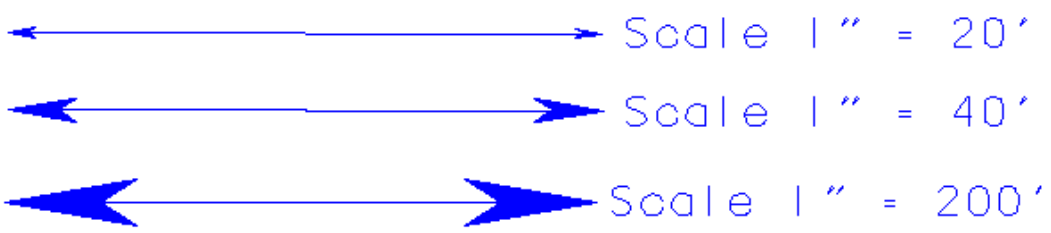
 © 2015 FDOT

3. Key in "**ACTIVE LINESTYLESCALE** #" where "#" is the desired *Custom Line Style Scale*; then, click the **Run Key-in** icon or press the **ENTER** key. In the example shown next, all custom line styles will now be placed at 5 times their normal scale.



Note The ACTIVE LINESTYLESCALE key-in is used to set the global scale factor for custom line styles. The specified scale factor has the same effect as the Scale Factor setting in the **Line Styles** dialog.

4. Regardless of the method used to set the *Custom Line Style Scale*, the resulting size of the Custom Line Styles should be the same provided that the *Custom Line Style Scale* and the *Plot Scale* of the DGN file match. Next are examples of the Right-of-Way *Custom Line Style* **EaseExistWidthArrow** used to show existing Easement Widths lines.

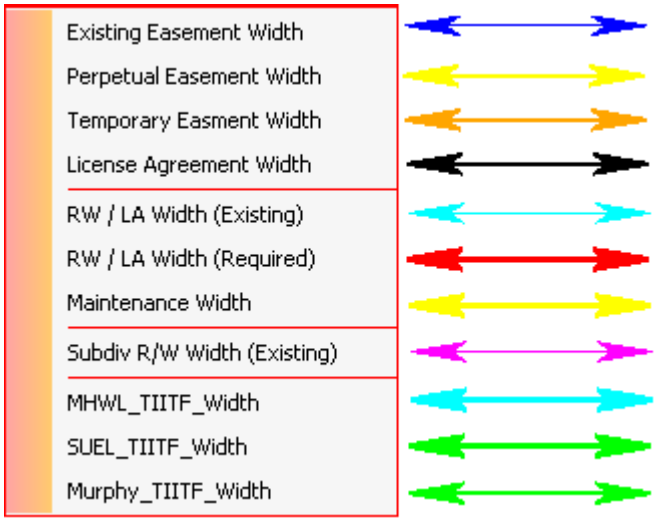


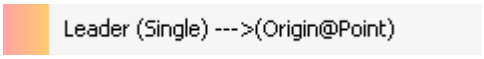
 © 2015 FDOT

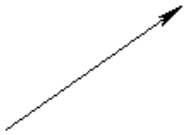
REVIEW RIGHT-OF-WAY ARROW TYPES

Under the **Right of Way** > **Arrows** menu pull-down are a variety of arrows that can be accessed and used by the FDOT Right-of-Way Mapper. Selecting and placing a Right-of-Way Arrow is as simple as choosing the desired arrow from the Right of Way FDOT Menu pull-down then placing the Custom Line Style in the appropriate place in the design file. With the **Begin/End Baseline Flag** Arrows, the size of the terminator arrows is controlled by the Custom Line Style Scale setting of the design file. The size of the **Begin/End Baseline Flag** is controlled by the Cell Scale setting of the design file. A list of the available Arrow types and their corresponding Right of Way FDOT Menu pull-downs are listed on the next few pages.

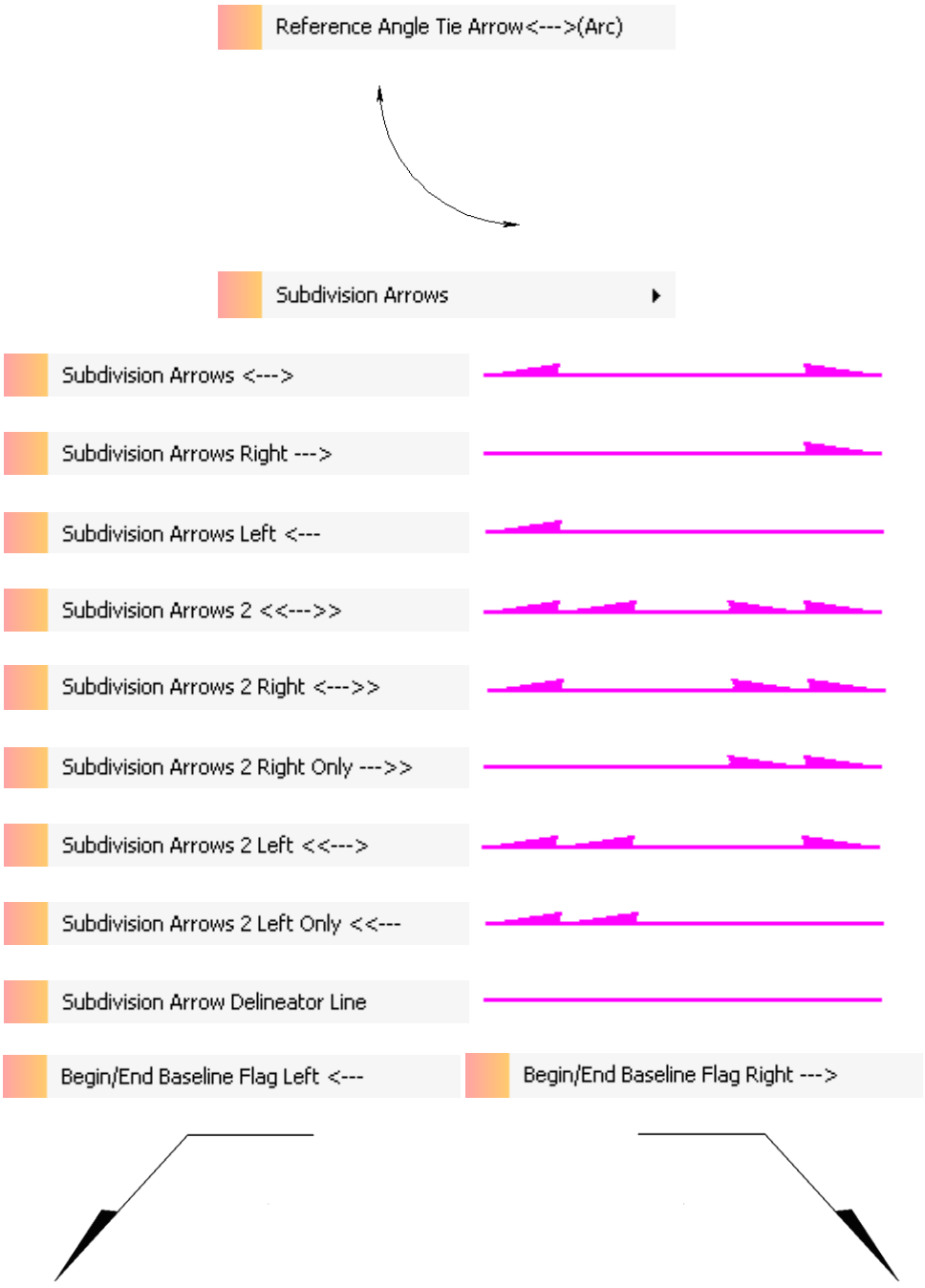
Place Width Arrow provides the following list of available Width Arrows. All Width Arrows from this menu have the same general display. The only symbology difference between them is that each Width Arrow is placed on the appropriate Level to ensure ByLevel Symbology.







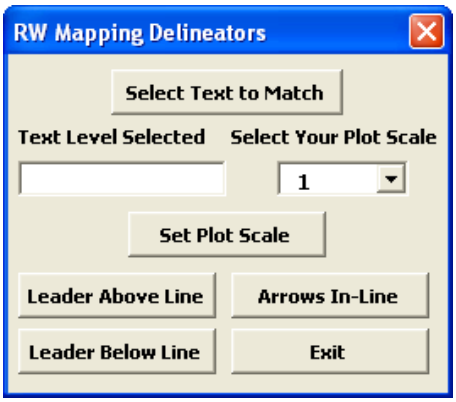
© 2015 FDOT


Reference Angle Tie Arrow<--->(Arc)
Subdivision Arrows
Subdivision Arrows <--->
Subdivision Arrows Right --->
Subdivision Arrows Left <---
Subdivision Arrows 2 <<--->>
Subdivision Arrows 2 Right <--->>
Subdivision Arrows 2 Right Only --->>
Subdivision Arrows 2 Left <<--->
Subdivision Arrows 2 Left Only <<---
Subdivision Arrow Delineator Line
Begin/End Baseline Flag Left <---
Begin/End Baseline Flag Right --->

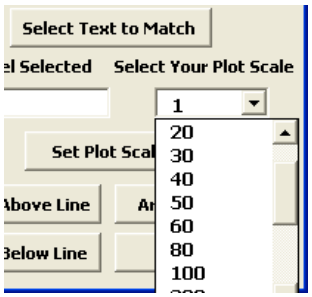
 © 2015 FDOT

PLACE DELINEATORS

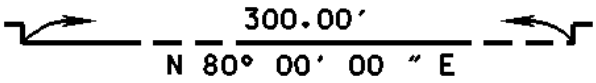
This Right of Way FDOT Menu macro automates the process of placing delineator arrows for bearing and distance. The macro will find the beginning and ending points of the line segment and then prompt the user for a data point defining which side of the line segment to place the delineators. Delineators will then be placed at the beginning and end points of the line segment. The FDOT Right-of-Way Mapper has two types of Delineators from which to select, *Arrows w/ Arc* and *Arrows in Line*. The size of the Delineator Arrows is controlled via the Place Delineators macro.



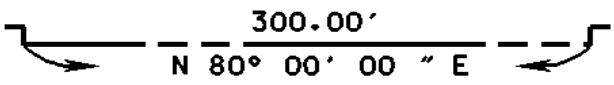
- **Select Text to Match** R/W Mapping standards require that delineator arrows be placed using the associated text symbology for the line type being used.
- Use the element selection tool to select the associated text then press the Select Text to Match button and the required symbology will be set in Text Level Selected box.
- **Select Your Plot Scale** Sets the required scale for R/W Mapping standards for placement of the delineator arrows. Multiple scales are place in the pull down.



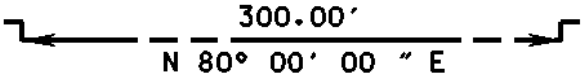
- **Leader Above Line** This option will place delineators with an arc and terminator arrow as shown below depending on the direction the line was original drawn in.



- **Leader Below Line** This option will place delineators with an arc and terminator arrow as shown below depending on the direction the line was original drawn in.



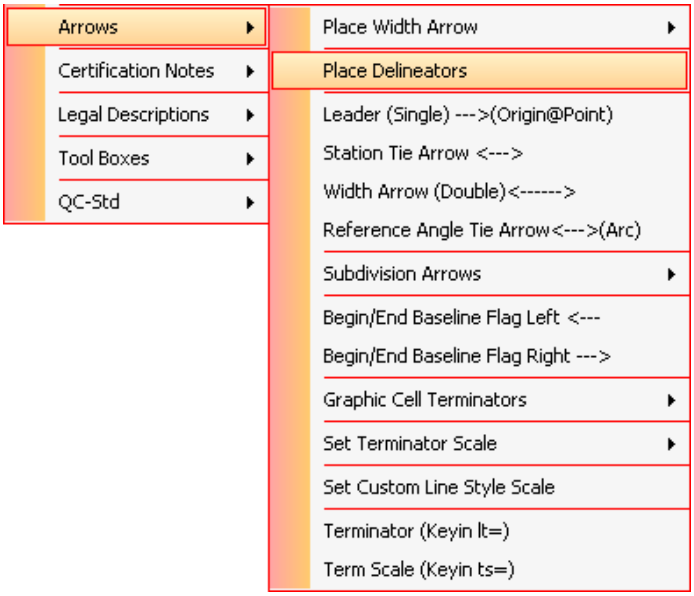
- **Arrows In-Line** This option places delineator arrows at the end of the line segment as shown below.



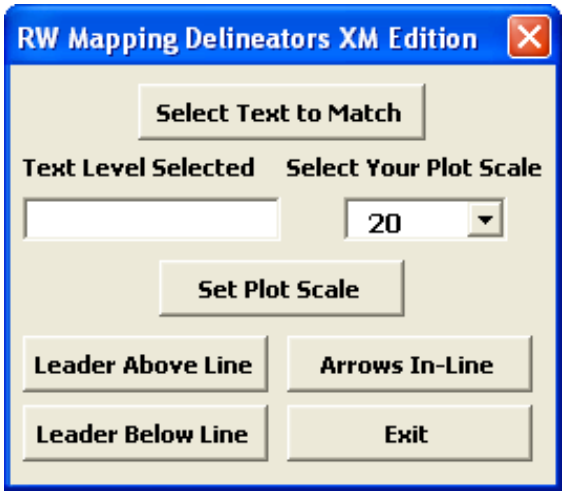
 © 2015 FDOT

A description of the Place Delineators dialog and the steps for using the Place Delineators macro are shown next.

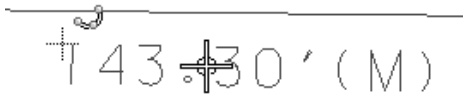
1. Using the Place Delineators Macro, select Arrows > Place Delineators from the Right of Way FDOT Menu as shown next.



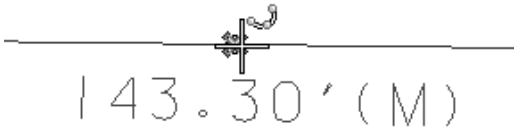
2. The Place Delineators dialog will open as shown next. Select the *Plot Scale* from the pull down or type as needed. The next example shows the *Delineator Type* **Leader Below Line** and a *Scale* of **1" = 20'** The Place Delineators dialog will open as shown next.



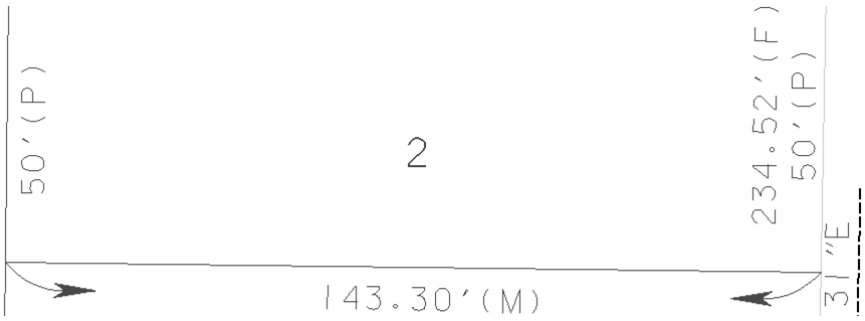
3. Select the *Text Element* to match then click on the **Select Text to Match** button.



4. Next, select the line on which the *Delineator Arrows* are to be placed.



5. Select how *Delineators* are to be placed **Leader Above Line**, **Leader Below Line** or **Arrows In-Line**. The *Delineator Arrows* will be placed at the ByLevel Symbology of the *Text Element* and at the selected *Scale*. The *Delineator Arrows* are placed dependent on the direction that the line was drawn. For example the line was drawn left to right and you select **Leader Below Line** the delineators will be placed below the line as shown below. If the line was drawn right to left the and **Leader Below Line** is selected the leaders will be placed above the line.

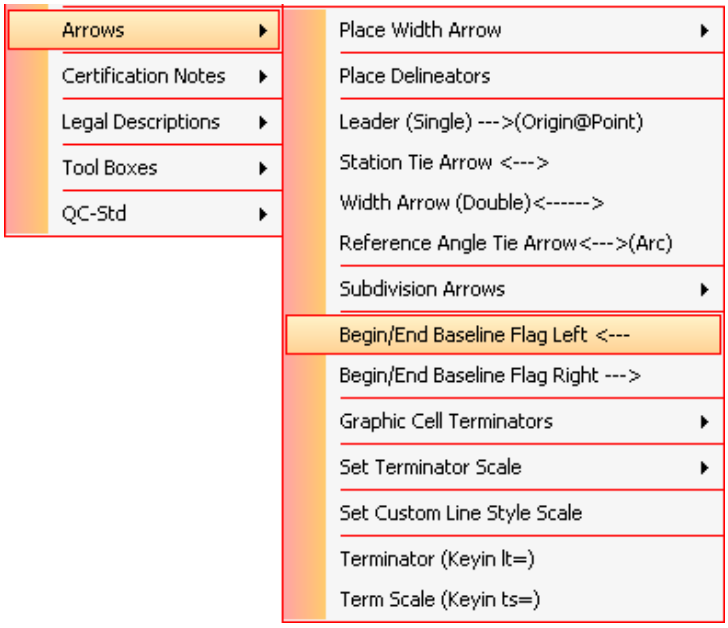


 © 2015 FDOT

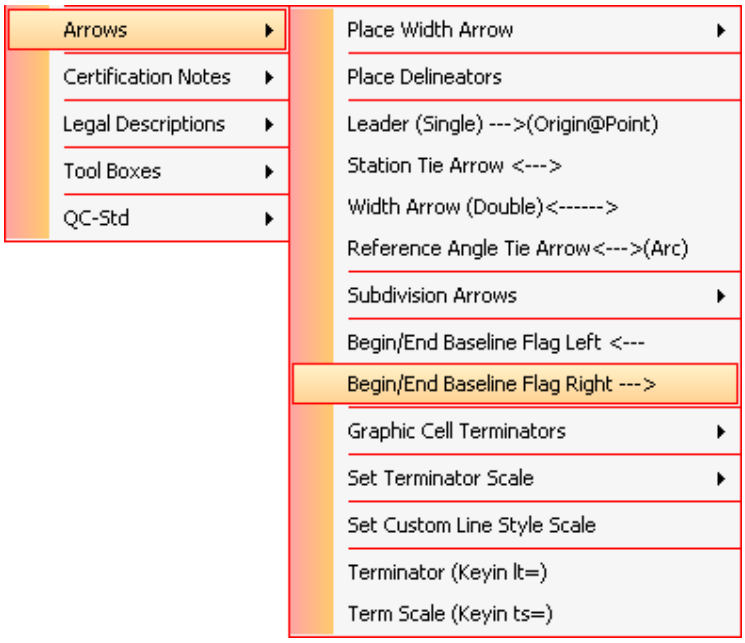
REVIEW RIGHT-OF-WAY TERMINATOR TYPES

Other than the terminator arrows that are part of Custom Line Style, there are four Right-of-Way terminator types. These are the **Begin/End Baseline Flag Left**, **Begin/End Baseline Flag Right**, **Arrow Left**, and **Arrow Right**. The size of these terminators is controlled by the cell scale setting of the design file. The path to these terminators in the Right of Way FDOT Menu and their display are shown next.

1. Select **Right of Way** > **Arrows** > **Begin/End Baseline Flag Left** to place the **Begin/End Baseline Flag Left** cell.



2. Select **Right of Way** > **Arrows** > **Begin/End Baseline Flag Right** to place the **Begin/End Baseline Flag Right** cell.



 © 2015 FDOT

3. Select **Right of Way > Arrows > Graphic Cell Terminators > Arrow Left (Cell=ARRWLG)** to place the **Arrow Left Graphic Cell Terminator**.

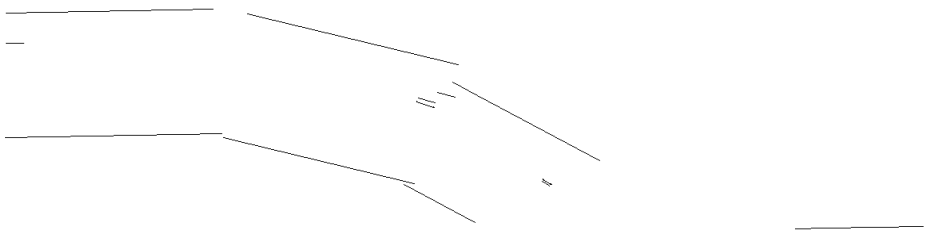
4. Select **Right of Way > Arrows > Graphic Cell Terminators > Arrow Right (Cell=ARRWRG)** to place the **Arrow Right Graphic Cell Terminator**.

 © 2015 FDOT

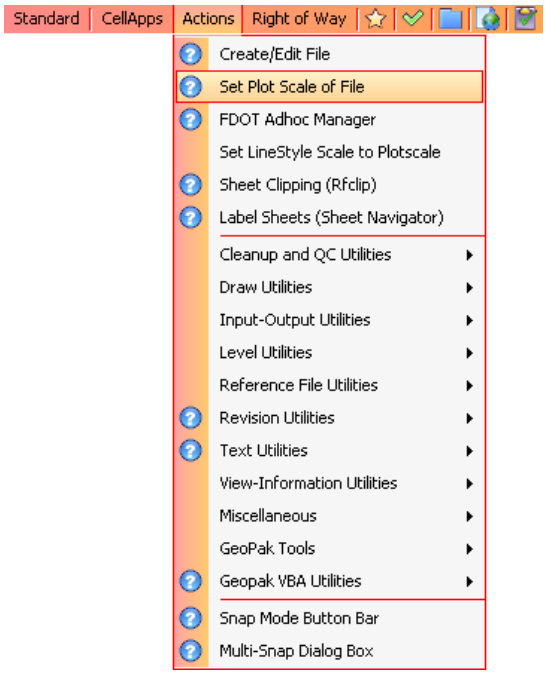
Exercise 11.1 Finish Placing Custom Line Styles

➢ ***In this exercise the user will finish placing subdivision arrows into the rw1234567.dgn.***

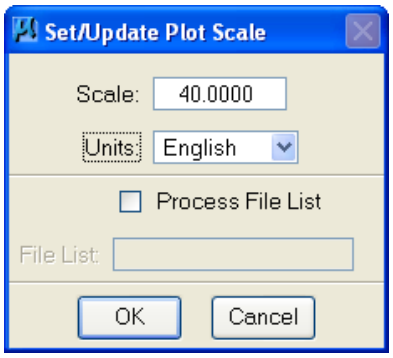
1. Open the DGN file C:\E\Projects\12345678901\rwmap*RW1234567.dgn*. Open the **Chapter 11** *Model* for this exercise. The Right-of-Way map should display as shown below. All Levels have been turned off except for **Level 3**. Level 3 is used as a backdrop for the user to "trace" over to place new elements into the file. If unsure of the proper type of element, the user can Reference the *RW1234567_FINISHED.dgn* from the *rwmap* folder of the project or ask the instructor.



2. It will first be necessary to set the *Plot Scale* of the DGN file. From the FDOT Menu, select **Actions** > **Set Plot Scale of File**.

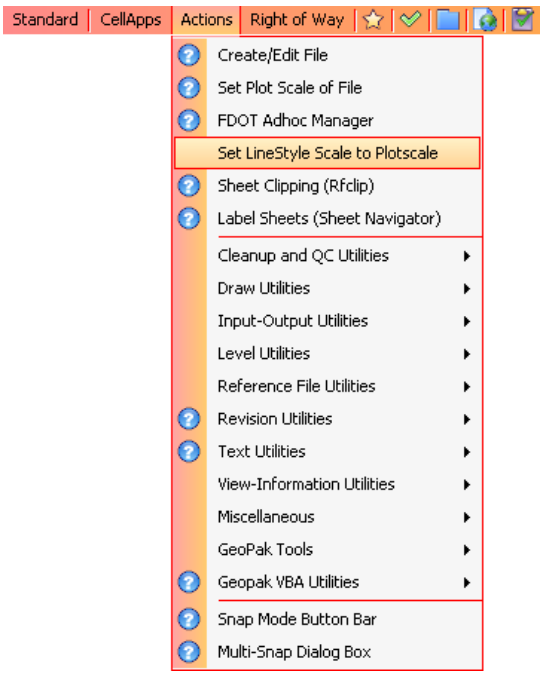


3. The Set/Update Plot Scale dialog will display as shown. Change the *Scale* to **40** and the *Units* to **English** and click **OK.**

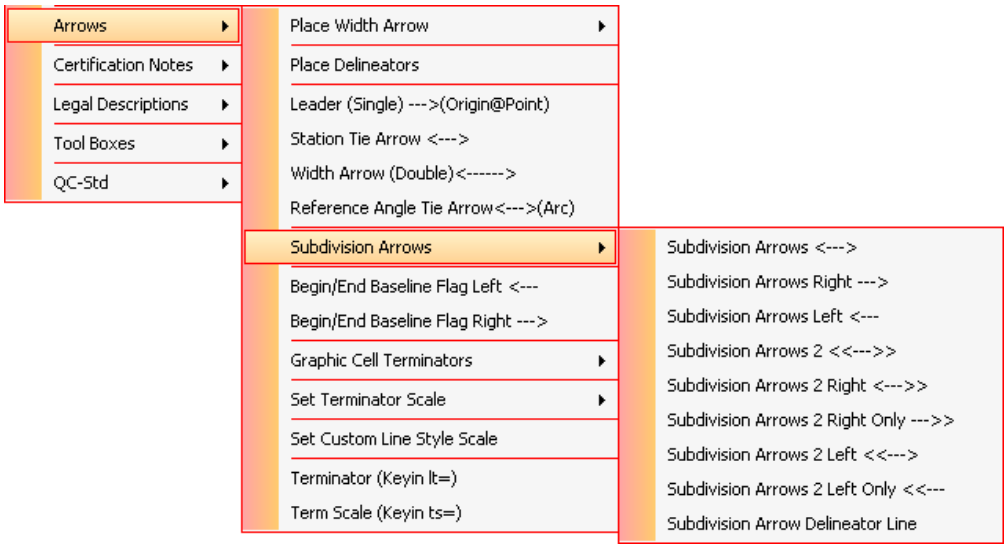


 © 2015 FDOT

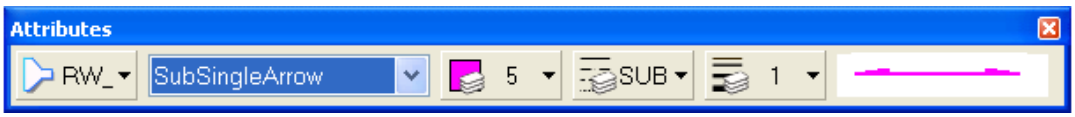
5. Now the *LineStyle Scale* will be set to the *Plot Scale* of the DGN file. To do this select select the FDOT Menu command button or select the menu option: **Actions > Set LineStyle Scale to Plotscale** as shown below.



6. From the RW FDOT Menu, select **Arrows** > **Subdivision Arrows** and then select the correct Subdivision Arrow type to replace the *Subdivision Arrows* on Level 3. If unsure of the Subdivision Arrow types, Reference the file *RW1234567_FINISHED.dgn* from the *\rwmap* folder of the project or ask the instructor.

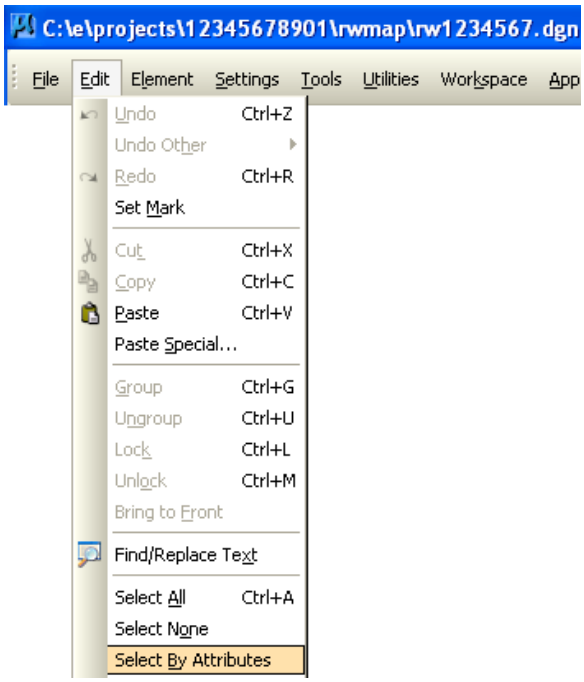


7. As each *Subdivision Arrow Type* is chosen, the RW FDOT Menu will activate the proper ByLevel symbology including the appropriate Custom Line Style. The *Attributes* tool bar is shown below after selecting the **Subdivision Arrows < -- >** type which resides on the *SubSingleArrow* Level.

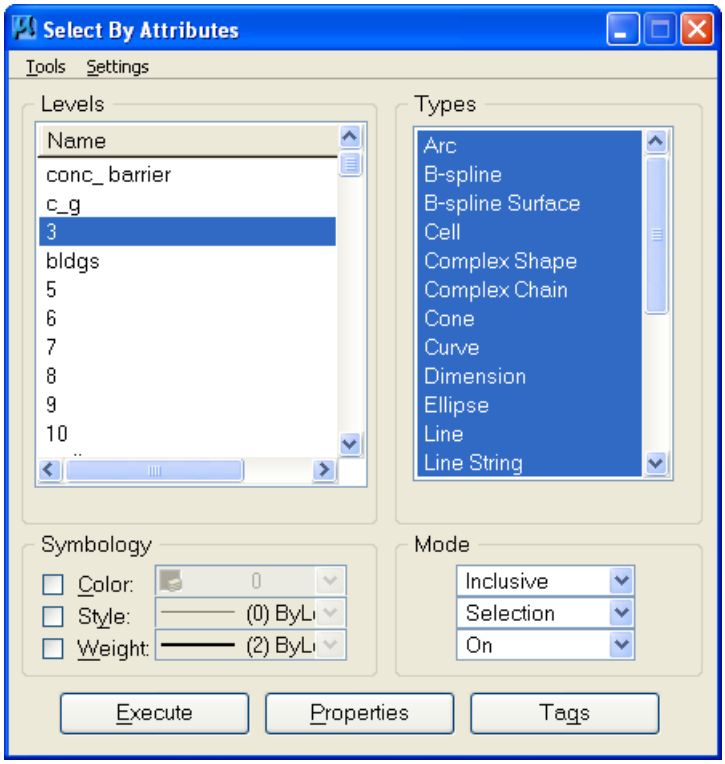


 © 2015 FDOT

8. Once finished with placing the *Subdivision Arrow Lines* select **Edit > Select By Attributes** from the main MicroStation menu. This command will be used to delete all elements from **Level 3**.

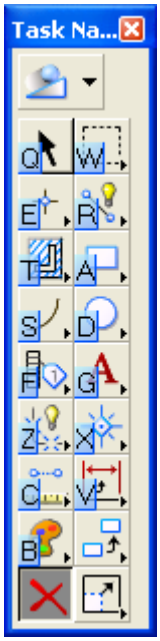


9. The Select By Attributes dialog will display as shown below. Click *Level* **3** and then click **Execute** to select ALL element types on **Level 3**.

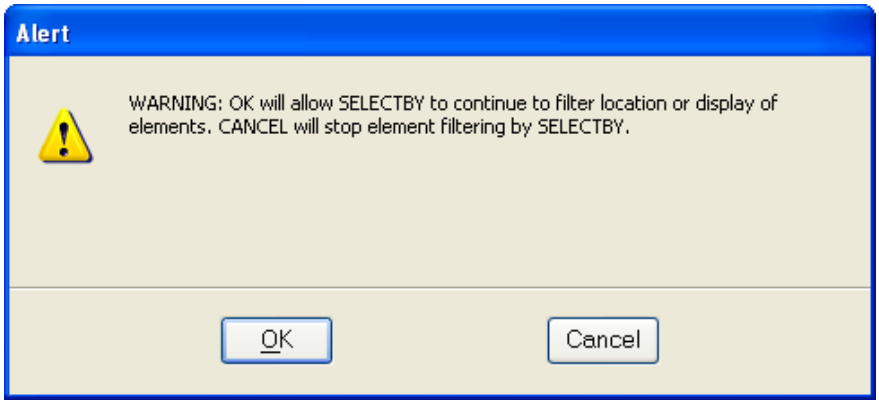


 © 2015 FDOT

10. Click MicroStation's *Delete Element* tool to delete all elements on **Level 3** in the DGN file.



11. Close the Select By Attributes dialog and click **Cancel** to the Alert that displays.



 © 2015 FDOT

12 RIGHT OF WAY FILE REFERENCING

OBJECTIVES

This chapter will teach the user how to:

- Accessing the References Dialog
- Attachment of Reference Files
- Reference File Modifications
- Reference File Clipping and Masking

INTRODUCTION

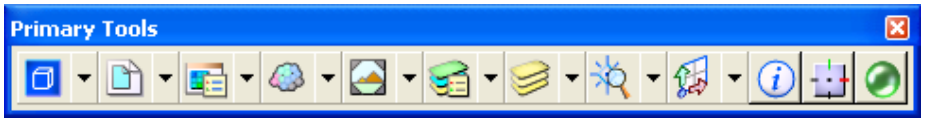
In the past Right-of-Way Mappers were often asked to use an existing drawing as a backdrop as they created new drawings. They would tape the existing drawing down onto their drafting table, and then tape a clean sheet on top of the first drawing. They had a clean sheet (new design file) on top of an existing drawing (reference).

This procedure of working over a backdrop is still being used today, but with automated techniques. In today's industry, individual members of a project team share electronic data files rather than the actual drawing sheets they used to share.

Several companies may be involved in producing a Right-of-Way Map which includes many types of information. Design files will be passed back and forth between all team members and all the pieces of the puzzle must fit together.

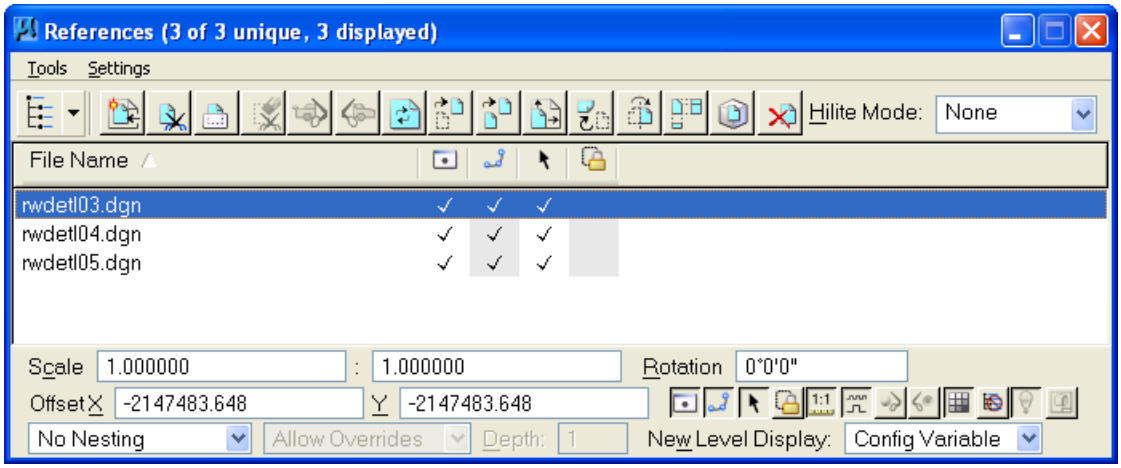
ACCESSING THE REFERENCES DIALOG

The center of **File > Reference** is the reference files settings box. The user can access this by selecting **File > Reference** from the main MicroStation menu or by clicking the icon or the pull down arrow from the *Primary Tools* tool box.



 © 2015 FDOT

Either method will launch the References dialog which acts as the center for all Reference related commands.



The user can also access the reference commands via the Reference toolbox, to select pick **Tools > References**.

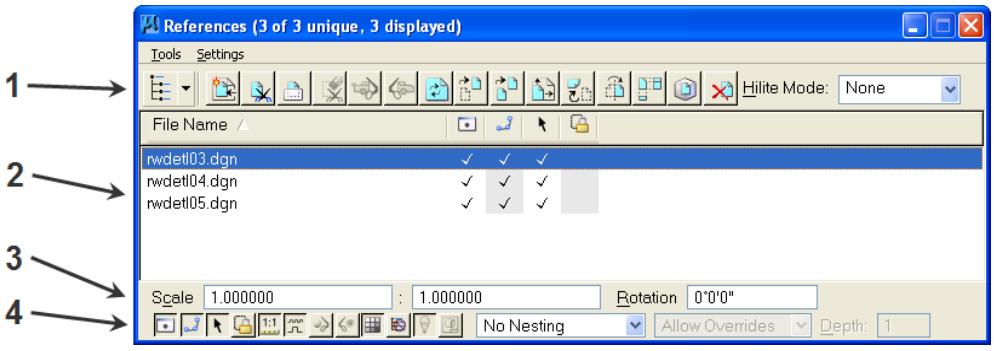
The Reference Files Dialog allows the user to attach and detach reference files to a drawing. It also is where clipping, masking, and several other settings are available for reference files. Elements in a reference display as though they were in the active model. Although the user cannot typically manipulate the elements in a reference, the elements can be snapped to and even copied into the active model.

The most common usage of references is in the creation of design compositions. Design compositions are used by engineers and other technical professionals to communicate through the visual content of their designs.

To create a design composition using MicroStation, the user builds a design model consisting of a working collection of references used in the performance of particular engineering tasks. For example, the user may attach as references a collection of survey points as a guide for placement of additional geometry. Reference attachments in a design composition are usually Coincident – World.

 © 2015 FDOT

MICROSTATION REFERENCES DIALOG



There are 4 major areas of the dialog.

1. Integrated tool box and Pull down Commands
2. Reference List
3. Reference Scale and Rotation settings
4. Reference toggles

INTEGRATED TOOL BOX AND PULL DOWN COMMANDS

The Integrated tool box and Pull down commands are where most of the tools are located. The user can either select **Tools >** or select the icons to launch the commands. Several of these will be covered in upcoming exercises.

Note Most icons will not be available until a Reference file is attached to the Active DGN.

- **Show Hierarchy** When on, displays a tree that shows the active file and references that are directly attached to it. References that have other references attached to them (nested references) are listed in black text, and references that do not have attached references are listed in gray text.

  If a reference in the hierarchy has a nest depth value of 1 or more, the user can:

  Click on the (+) sign and expand the hierarchy display.

  Select the references. When the user does this, the references list box updates to include only the references that are attached to the selected reference.

  When the tree is turned off, the user can use the arrow button next to the Show Hierarchy icon to list the active file and any references that are directly attached to it. As in the tree, if the user selects a reference that has attached references, the references list box updates to include only the references that are attached to the selected reference.

- **Attach Reference** Opens the Attach Reference Dialog, which lets the user attach a reference file or model to the active file.

- **Clip Reference** The *Clip reference* tool uses a boundary, such as an element or fence, to clip reference. The area of the reference outside the boundary is not displayed.

 © 2015 FDOT

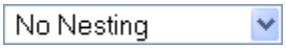
- **Mask Reference** The *Mask Reference* tool covers a portion of a reference that is inside a boundary. More than one clipping mask can be specified for a model.
- **Delete Clip** The *Delete Clip* tool deletes a clipping mask.
- **Set Ref Back Clip Z** Sets the back clipping plane, which is a boundary used to clip a 3D referenced model. The position of the clipping plane is measured along the view's z-axis. Only the portion of the reference in front of the back clipping plane is displayed. This is a 3D file tool only.
- **Set Ref Front Clip Z** Sets the front clipping plane, which is a boundary used to clip a 3D referenced model. The position of the clipping plane is measured along the view's z-axis. Only the area behind the front clipping plane is displayed. This is a 3D file tool only.
- **Reload reference** Reloads and redraws reference, which lets the user see changes that have been made to the referenced model since it was last attached or reloaded.
- **Move reference** Moves the reference file.
- **Copy reference** Copies the reference file.
- **Scale reference** Resizes the reference file
- **Rotate reference** Rotates the reference file
- **Mirror reference** Reflects a reference file about a horizontal or vertical axis.
- **Copy/Fold reference** Copies the selected reference file, then attaches a view of the reference file by folding it about an orthogonal axis or a line defined.
- **Set reference Presentation** This command sets options for displaying reference file. These options include Wireframe, Wiremesh, Hidden Line, Filled Hidden Line, and three types of shading.

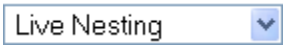
  In a sheet model, the Presentation menu has one additional option: True Hidden Line. Unlike the other reference presentation options, True Hidden Line generates a new vector model of the reference, with hidden lines removed. In the sheet model, a reference set to True Hidden Line looks similar to a reference set to Hidden Line. However, when the user prints the sheet model, a reference set to True Hidden Line will print as a true vector image. A reference set to any other presentation option (such as Hidden Line) will print as a raster image.
- **Detach reference** This command detaches the reference file from the active model.

REFERENCE TOGGLES

 © 2015 FDOT

- **Display** Controls whether the file is shown or not, if off, the display of that file will be turned off.
- **Snap** Controls whether an element can be snapped to, is helpful for measurements from elements contained in a reference file.
- **Locate** Controls whether an element in a reference file can be used for certain modification or manipulate commands.
- **Treat Attachment as Element for Manipulation** When enabled, this option allows manipulation of attached references using the same tools and methods as for standard elements.
-

True Scale Attaches reference file in the true scale.
- **Scale Line Styles** If on, custom line style components (for example dashes) are scaled by the Scale factors. If off, custom line style components are not scaled.
- **Clip Back** Sets the back clipping plane for a 3D referenced model.
- **Clip Front** Sets the front clipping plane for a 3D referenced model.
- **Display Raster References** Turns on any Raster reference displayed.
- **Ignore Attachment When Live Nesting** If on, this ensures that if the current attachment becomes a nested reference, it will be ignored.
- **Use Lights** If on, during processing for rendering, the source lighting cells present in the active file always are considered. Any source lighting cells located in references are ignored unless the Use Lights setting is turned on for the reference.
- **Plot as a 3D PDF** (PDF printer driver only) When on and the PDF printer driver is used, the reference is plotted as 3D data in Universal 3D (U3D) format. The 3D content will contain any visualization data and settings that already exist within the design file such as lights, materials, and animations or flythroughs. When the PDF file then is viewed in Acrobat 7, the document contains a 3D view with controls that let you rotate, zoom in/out, or walk through the 3D model, as well as running an animation, if any.
- 

No Nesting Models attached to the attached model are not recognized in the active model.
- 

Live Nesting If on, the hierarchical structure of any nested references are maintained when attaching the parent reference to a model. When the user attaches a reference that has one or more attachments, and if the Nest Depth is set high enough, all of the nested attachments display in the view window; however only the parent references will be seen in the References dialog's list box. To see the

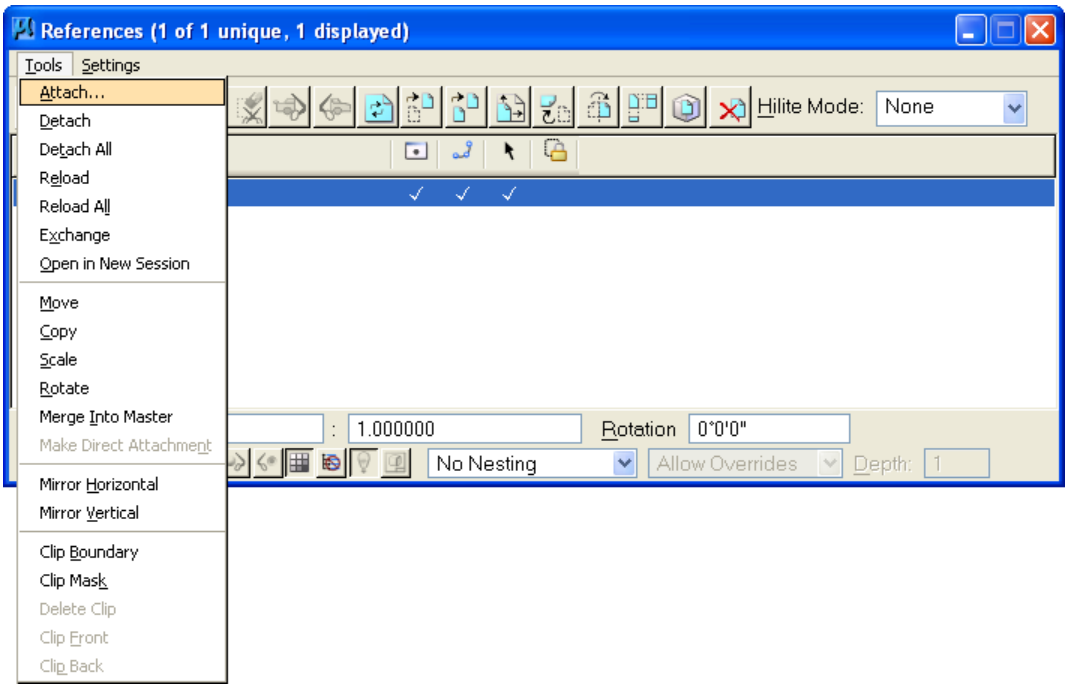
hierarchy of any nested references, use the Show Hierarchy icon on the References dialog.

-

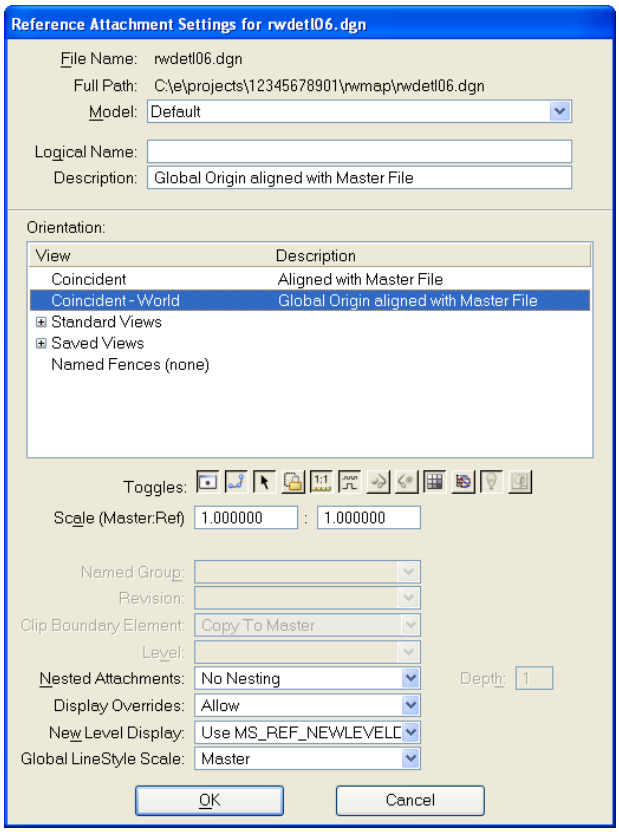
Copy Attachments Models attached to the attached model copied directly into the active model, disregarding the hierarchical structure of the nested references. When the user attaches a reference that has one or more attachments, and if the Nest Depth is high enough, all of the attachments are displayed in the view window, and all of the attachments (parent and any nested references) are listed in the References dialog's list box as individual attachments.

ATTACHING REFERENCE FILES

To attach a reference file, select **Tools > Attach** from the **References** dialog <or> select **File > Reference** from the main MicroStation menu <or> click the icon from the **Primary Tools** tool box.



Once a file is selected to attach, the **Reference Attachment Settings** dialog displays.



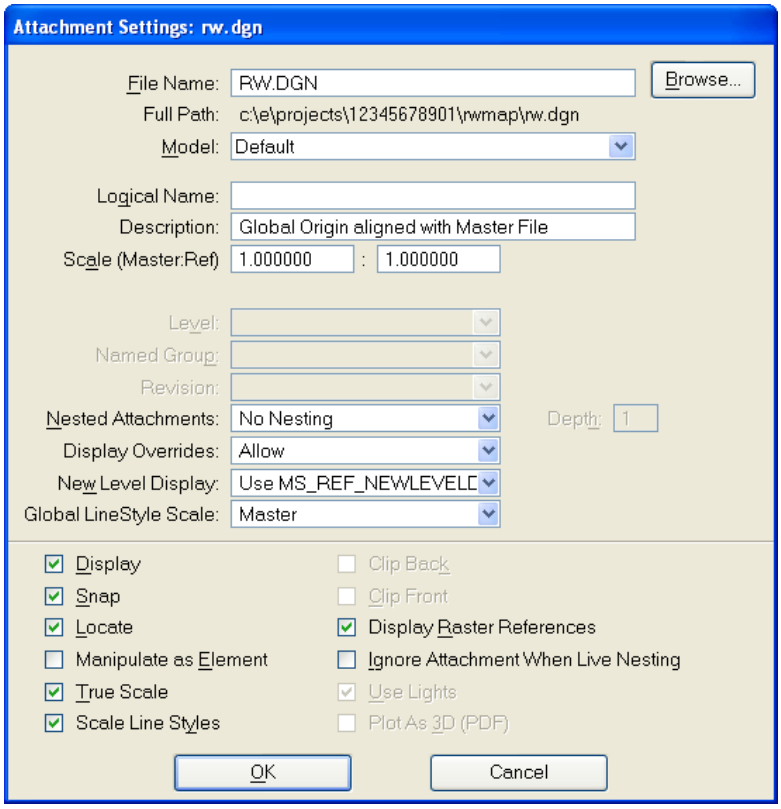
FDOT recommends that the user always use **Coincident World** and **True Scale** options when attaching reference files, so that if the user attaches files from an older standard to a file with the current working units that the files line up correctly. Older versions of FDOT CADD files have different resolutions because they were done in MicroStation version 7 and then converted to MicroStation XM.

Now let's discuss options just chosen and what the other options are when attaching reference files.

- **File Name** Shows the reference's name.
- **Full Path** Shows the full file specification for the reference, including the directory.
- **Model** Lists the models within the reference. This is used to select the model to be attached to the master model.
- **Logical Name** Sets the logical name of the model.
- **Description** Sets the optional description for the model. The maximum valid description is 512 characters.
- **Orientation** Sets the view of the model being attached. The list may also include saved views. The user can select more than one orientation to attach.
- **Coincident** Aligns the references with regard to design plane coordinates only.
- **Coincident World** Aligns the references with the active model with regard to both Global Origin and design plane coordinates.
- **Top, Right, Front, Isometric, Bottom, Back, Left, Right Isometric** Sets the views used to attach the reference. If the file being attached is 2D, the user can select only the Top view.

 © 2015 FDOT

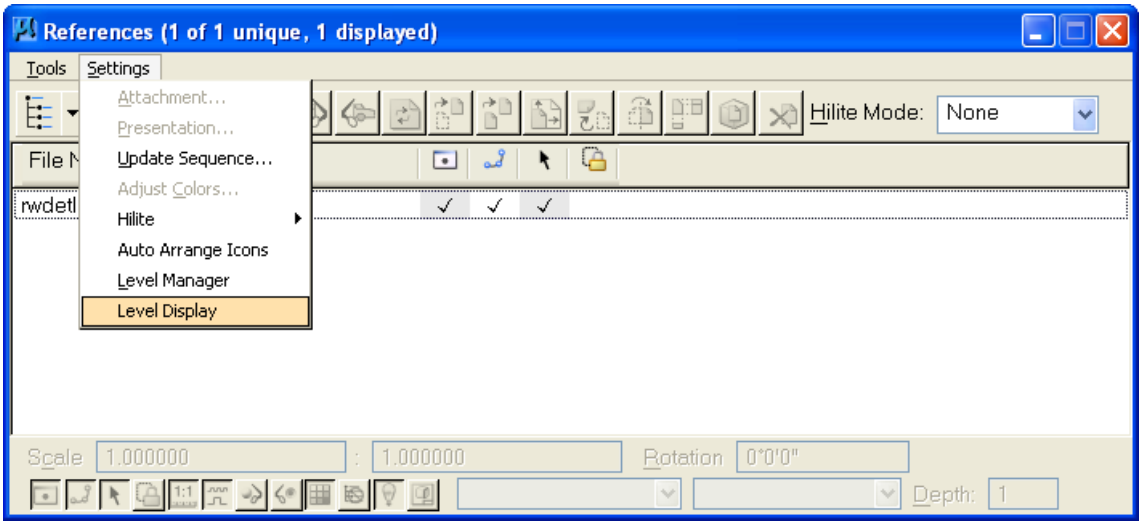
- **Scale (Master:Ref)** Sets the ratio of the master units in the active model to the master units in the attached model.
- **True Scale** If on, units in the active model align one to one with units in the referenced model. For example, if the units in the active model are inches and the units in the referenced model are meters, meters are converted to inches so the elements are referenced in at the same relative size.
- **Display Raster References** If on, raster references will display in the master model.
- **Options** Opens the Attachment Settings dialog, which is used to adjust the settings of a referenced model.



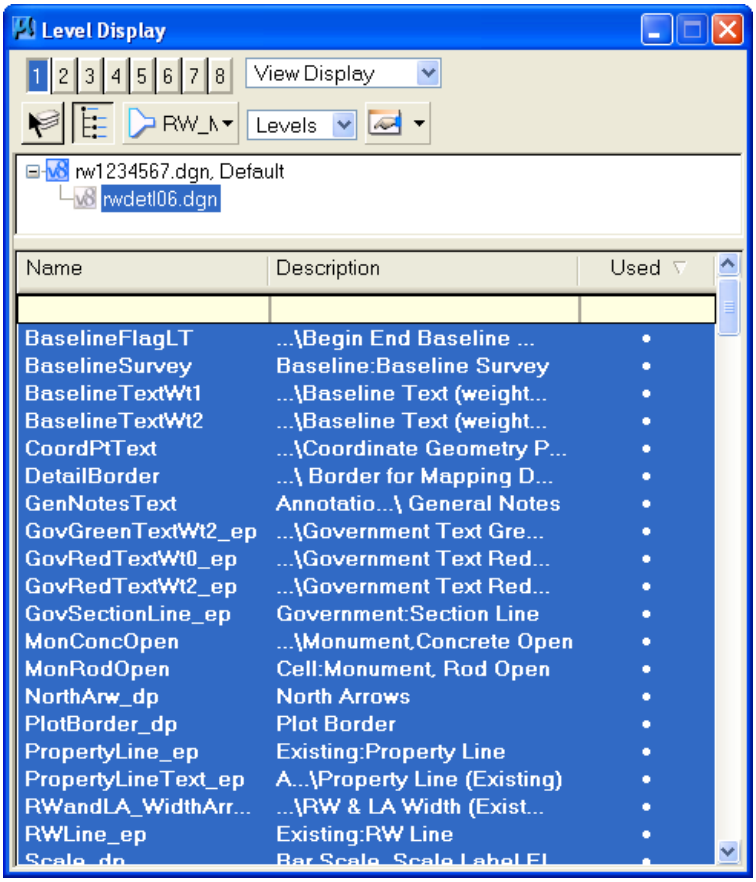
- **Display** Turns the view of a reference on or off.
- **Snap** If on, allows the user to snap to elements in a particular reference, when the reference is attached.
- **Locate** Controls whether elements in a reference can be identified.
- **Clip Back** Sets the back clipping plane for a 3D referenced model.
- **Clip Front** Sets the front clipping plane for a 3D referenced model.
- **Scale Line Styles** If on, custom line style components (for example dashes) are scaled by the Scale factors. If off, custom line style components are not scaled.
- **Ignore Attachment When Live Nesting** If on, this ensures that if the current attachment becomes a nested reference, it will be ignored.
- **Use Lights** If on, during processing for rendering, the source lighting cells present in the active file always are considered. Any source lighting cells located in references are ignored unless the Use Lights setting is turned on for the reference.

Once a file is attached its levels can be manipulated just as they are in the active file.

To manipulate the reference files levels, select **Settings > Level Display** from the References dialog. The user can also select the standard Level Manager from **Settings > Level Display**.

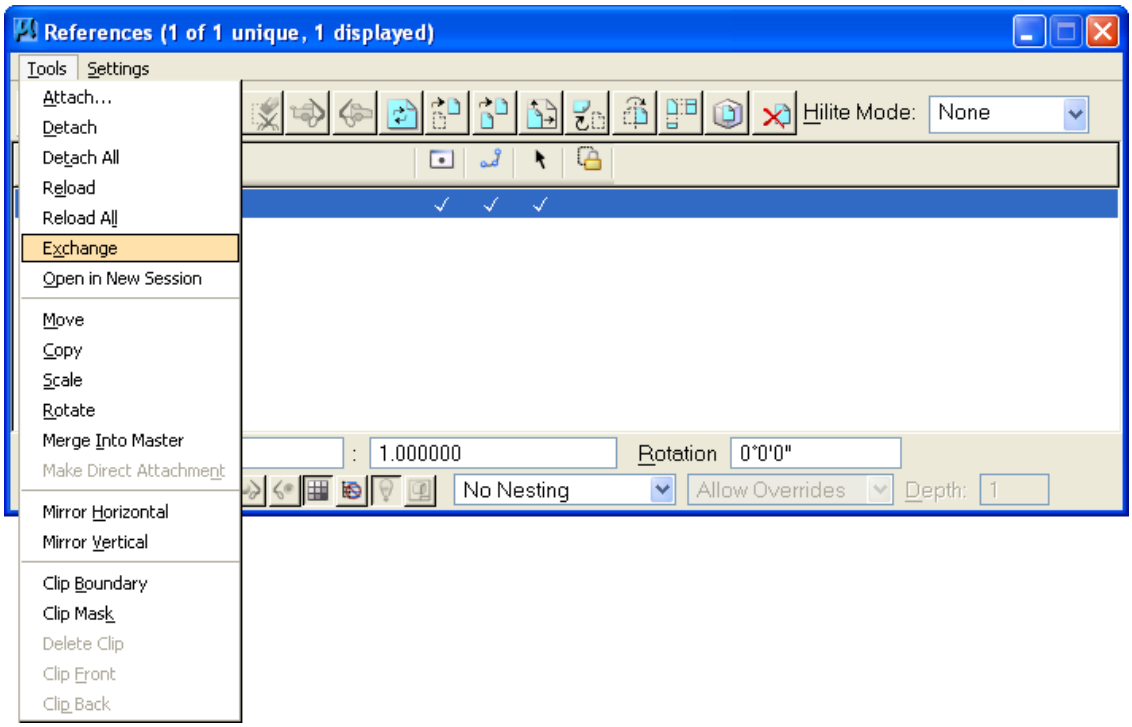


From the **Level Display** dialog the user can control what level displays in which of the views. To turn on or off a level, select the level and then pick which views this should apply to. A level that is darkened in or "black" is a level that is displayed; a level that is "grayed" is a level that is not displayed; and the Active Level is displayed in "Turquoise". A sample of the **Level Display** dialog is shown.

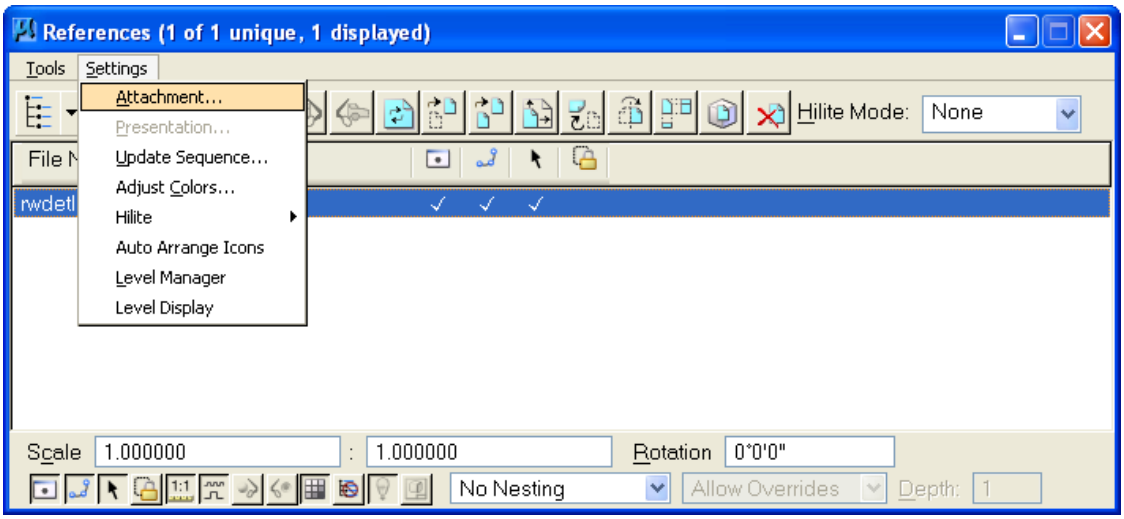


 © 2015 FDOT

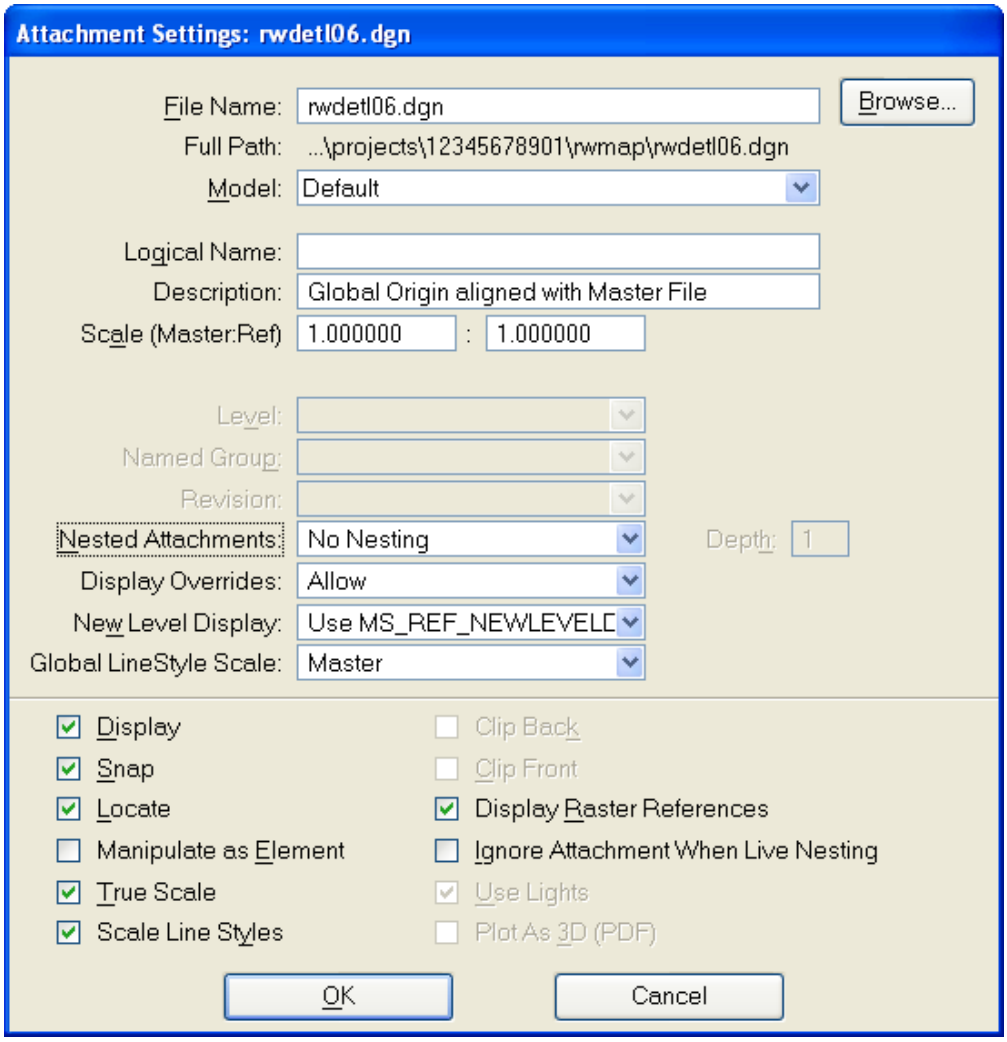
The user can also exchange a reference file for another file or change its Logical Name and or Description. The Exchange tool can be accessed from the Reference Files toolbox by selecting **Tools > Exchange**.



A new logical name or description can be defined for a reference file by selecting **Settings > Attachment** from the References dialog.



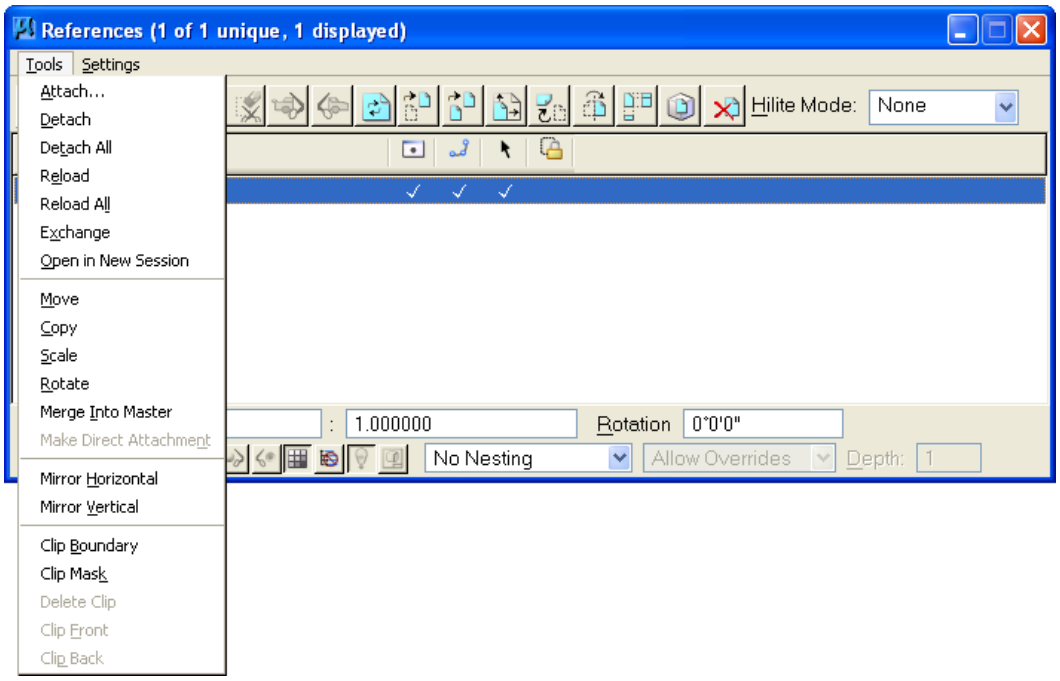
A new logical name or description can be defined by editing these fields and selecting **OK**. Remember that when many files are attached the logical and descriptions are important as they will help the user determine what data is located in which file.



A file can be substituted, for instance if there is a newer revision of the same file, the **Browse** button can be pressed, the file selected and **OK** chosen. This will enable the new file to be displayed instead of the original reference file, complete with any clip boundary or clip masking.

 © 2015 FDOT

Once a reference file is attached it can be manipulated in a variety of ways. All of the ways are listed on the **Tools** pull down menu from the *Reference Files* tool box.



Note By this time the user has probably referenced quite a few files, an alternative way to attach a reference file is by keyin. The <RF=> keyin is used to attach a file and can also include a path. For example, to attach a detail sheet to a file the user would key in <RF=rwdetl01.dgn>. If the file exists within the RWMAP directory then MicroStation will find the file. If the file is in a different directory than the current DGN, then the full path to the file to be referenced would need to be defined in the keyin command.

 © 2015 FDOT

REFERENCE MODIFICATION TOOLS

The user may be familiar with the reference process and may have already attached quite a few reference files. However, a review of some of the basic reference commands is still a good idea.

- **Attach** has two methods that can be employed. The user can select either, Coincident or Saved Views.
- **Detach** which will detach the file that is selected.
- **Detach All** will detach all attached reference files within all views.
- **Reload** will reload the selected reference files. The attachment of a reference file is a "dynamic" copy of the file at the time of attachment and therefore will need to be updated during the design session. When a file is opened that contains reference files the files are updated with the current version.
- **Ref Agent** allows the management and update of local copies of remote reference files.
- **Exchange** will swap the active file for the selected reference file; this saves a fair amount of time by not having to clip, rotate etc. the new reference file.
- **Move** will move the selected reference file.
- **Scale** changes the size of the reference file based on a scale that the user defines interactively.
- **Rotate** changes the files rotation based on the value keyed in.
- **Copy Attachment** is used on reference files to create another attachment of the same file in the same location preserving any clipping or masking.
- **Merge into Master** is a command that will copy all data in the reference file to the active file and should not be used for everyday Right of Way Mapping design.
- **Mirror Horizontal** and **Mirror Vertical** are commands that will not be used much in Right of Way Mapping, however they are similar to the Mirror commands within the MicroStation manipulate commands.
- **Clip Boundary** allows us to define an area of a reference file via a fence of which, anything outside will not be displayed. This command is similar in the way that Fence Delete with Void Clip as our Fence Mode works.
- **Clip Mask** allows us to not display or mask an area of a reference file via a fence. This command is similar in the way that Fence Delete with Inside as our Fence Mode works.
- **Clip Mask** delete allows for the removal of any masks that have been previously placed on a selected reference file.

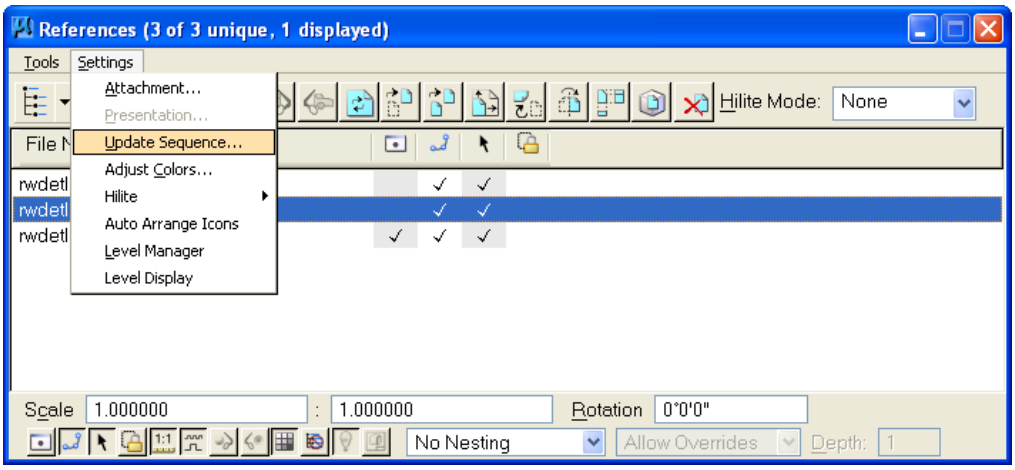
Note Once a Reference file is attached to the Active DGN file, the **Fit View** command displays additional options.

 © 2015 FDOT

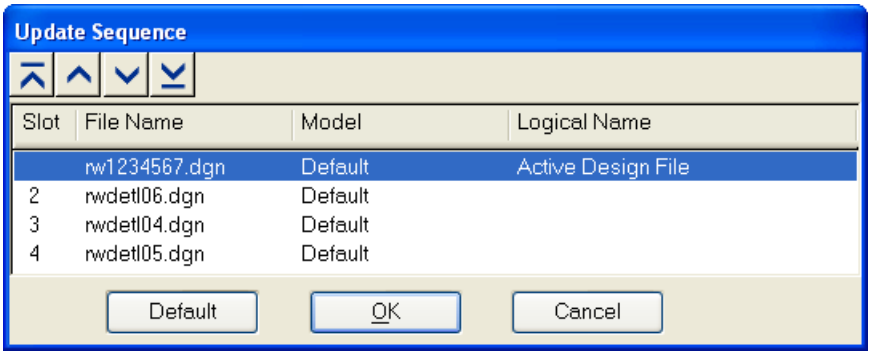
UPDATE SEQUENCE

Since FDOT Right-of-Way Mappers use masked text, it may be necessary to change the sequence in which the master and reference files are loaded in order to get the masked text to work correctly. This is needed since the reference files by default are loaded after the master file instead of before.

To change the order in which the master and reference files are loaded, select **Settings > Update Sequence** from the References dialog.



Choosing **Settings > Update Sequence** from the **References** dialog will display the **Update Sequence** dialog shown next.



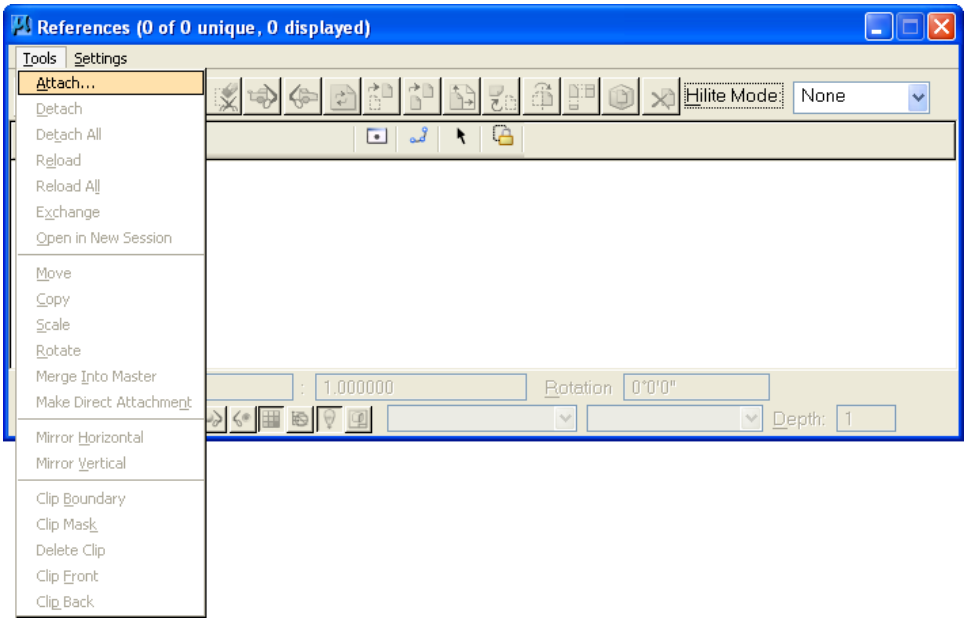
The dialog above shows the default Update Sequence for MicroStation. The default Update Sequence is to update the master file followed by any reference files in the order that the reference files were attached.

To change the Update Sequence for the master and reference files, the user simply selects a file from the list and uses the arrows to move the file up or down in the list.

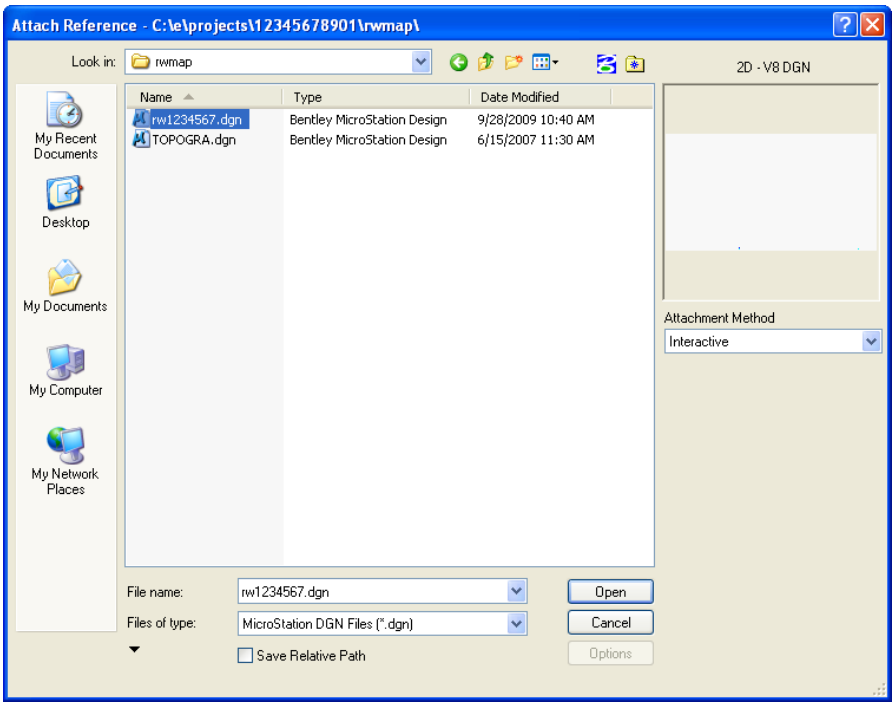
Exercise 12.1 RW Reference Files

1. Open the file c:\e\projects\12345678901\rwmap*RW1234567.DGN* from the project directory. Open the **Default** *Model* for this exercise.

2. The topographic file from Survey will be referenced to the *RW1234567.dgn* for later inclusion in the RW Map Sheets created in the next chapter. From the main MicroStation menu select **File** > **References**. Then, select **Tools** > **Attach** from the References dialog.

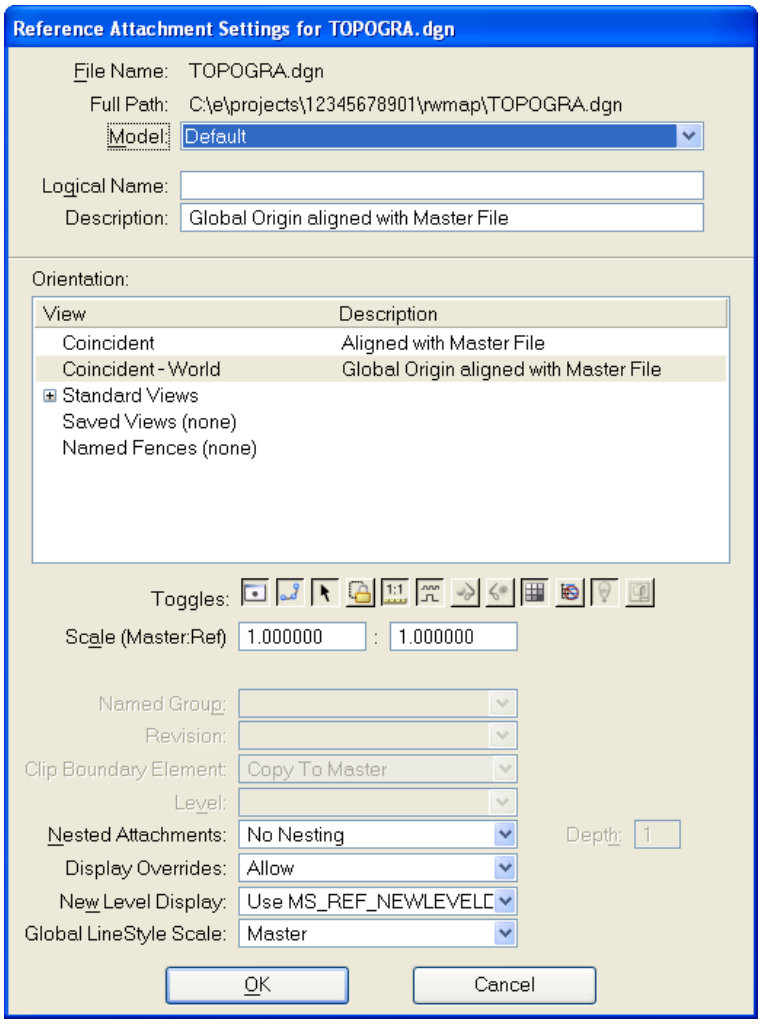


3. Navigate to the project directory and select the **TOPOGRA.DGN** file. Next, select **OK**. In the Lower right corner of the dialog make sure the **Interactive** option is chosen.

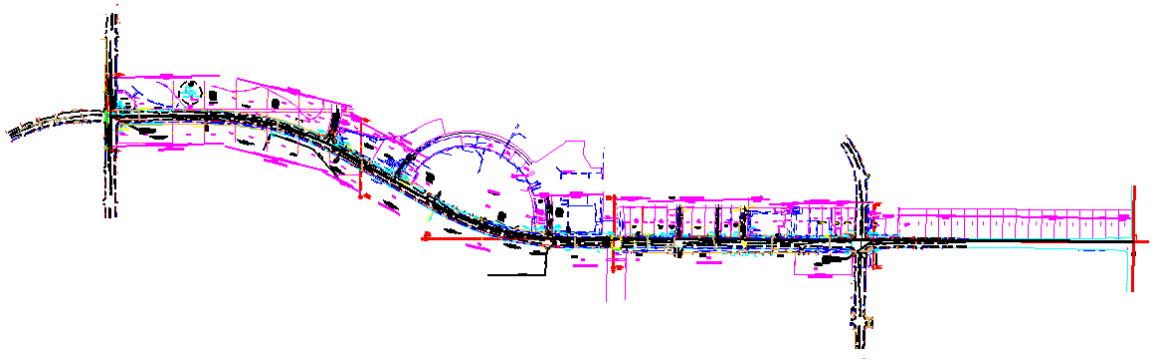


 © 2015 FDOT

4. Attach all of the **RWDETL** sheets using the settings shown below. Click **OK** to attach each individual DGN file.



5. The *RW1234567.dgn* will now display as shown below.



 © 2015 FDOT

13 RIGHT OF WAY SHEET

OBJECTIVES

This chapter will review the creation of Right-of-Way Detail sheets from the RW Main file. Items covered will include:

- Accessing GEOPAK's Plan & Profile Sheet Composition Tool
- Invoking the Main Dialog
  - Sheet Library
  - Main Menu Bar Overview
  - Dialog Icons
  - Sheet Name Selector and Plot Scale
- Primary Work Flow
- Sheet Composition

INTRODUCTION

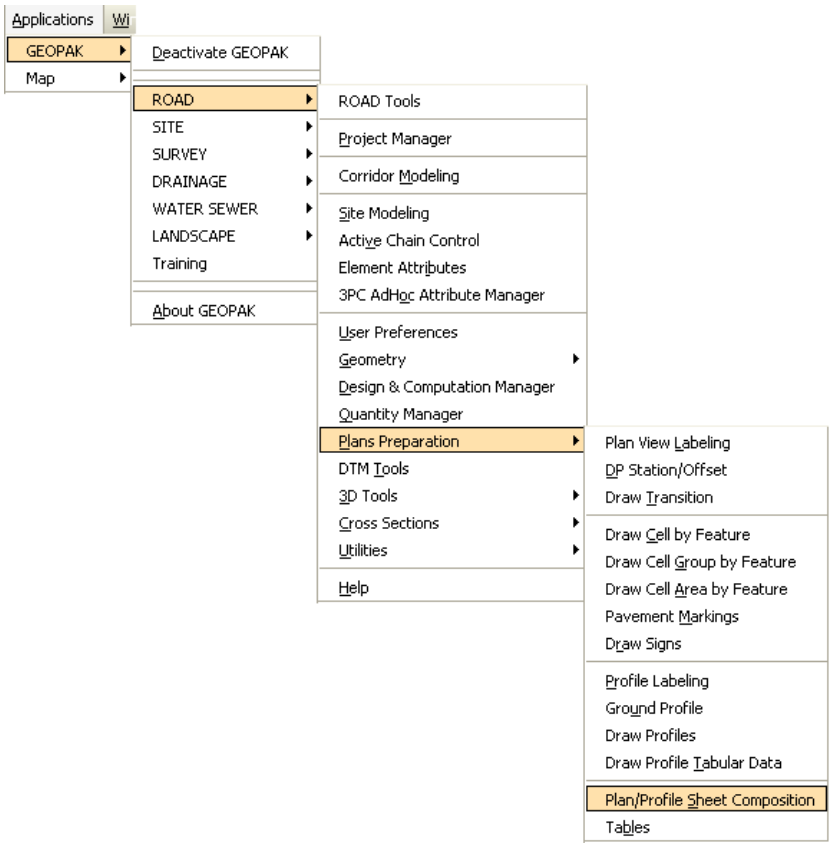
Once most of the Right-of-Way data has been drawn into the RW Main file, the FDOT Right-of-Way Mapper will need to create individual RW Detail sheets. This is done by using GEOPAK's Plan/Profile Composition tool. The Plan & Profile tool allows for the automatic placement of RW Detail sheet cells along an alignment and then each sheet cell is placed into its own separate DGN file.

ACCESSING GEOPAK'S PLAN & PROFILE SHEET COMPOSITION

These are some of the new features that the Plan/Profile Sheets Application provides:

- Supports any combination of Ports on a sheet for maximum flexibility.
- Provides powerful handling of MicroStation reference files. This is accomplished by having other MicroStation files serve as patterns for the reference file attachments. These are called motif files.
- It has the option to automatically make a notch in the clipping shape at layout time to make room on the sheet for a title block. This is done by putting the clipping shape pattern into the sheet cell.
- Extended Stationing is used as a means to allow sheets to be placed partially off of an alignment or even completely off of the alignment.
- It has the ability to place sheets with a Right to Left Station progression, which is opposite of the standard used in roadway design. This was added for users doing rail design.
- A thorough capability is provided to perform sheet numbering. Alphanumeric prefixes and suffixes can be added as well as changing the start number of the sheets and rearranging the ordering.

The Plan & Profile Sheet Composition tool can be accessed by selecting **Applications > GEOPAK ROAD > Plans Preparation > Plan/Profile Sheet Composition**.

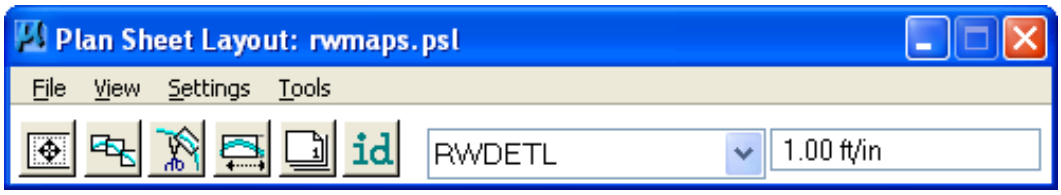


The Plan & Profile Sheet Composition tool can also be invoked from Project Manager by clicking the Plan & Profile Sheets button or by selecting the Plan/Profile Sheet Composition icon from the GEOPAK ROAD tool frame.

 © 2015 FDOT

ACCESSING THE MAIN DIALOG

When the Plan/Profile Sheet Composition tool is selected, the Plan Sheet Layout dialog opens.



The Plan Sheet Layout dialog is comprised of the title bar which displays the current Sheet Library, the main menu bar, short-cut icons, and the Sheet Name Selector and Plot Scale fields.

The first time the application is invoked, it opens up a default.psl sheet library located in the \geopak\bin\ folder if the configuration variable isn't defined. When inside the FDOT 2008 environment, the **rwmaps.psl** will be opened. The **rwmaps.psl** Sheet Library contains all the settings needed to create RW map sheets from the RW Main file.

The Plot Scale will be displayed in the proper units depending on how it is set in the User Preferences.

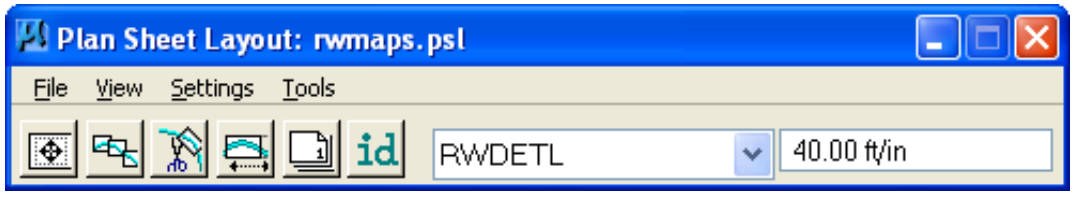
SHEET LIBRARY

The **FDOT CADD Software** provides a standard Sheet Library file for R/W Mapping called **RWMAPS.PSL** to be used with the **Plan Sheet Layout** program. This version of Geopak's Plan/Profile sheet clipping program contains, in most part, the same procedures as the Classic version previously described, with some additional enhancements.

In the **Plan Sheet Layout** program all sheet layouts for R/W are contained in this single library file rwmaps.psl.

The following table lists the available R/W Sheet Layouts:

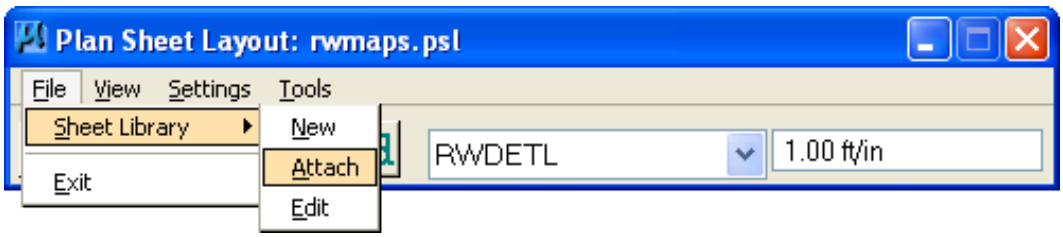
Sheet Name	Description	Scale	Sheet Type
CSDETL	Control Survey Detail	Any Scale	Plan (Port1)
CSKEYM	Control Survey Keymap	Any Scale	Plan (Port1)
MMDETL	Maintenance Detail Sheet	Any Scale	Plan (Port1)
MMKEYM	Maintenance Keymap	Any Scale	Plan (Port1)
RWDETL	Right of Way Detail	Any Scale	Plan (Port1)
RWKEYM	Right of Way Keymap	Any Scale	Plan (Port1)
RWPSL	Right of Way Parcel Sketch (Landscape)	Any Scale	Plan (8.5" x 14") (Port1)
RWPSP	Right of Way Parcel Sketch (Portrait)	Any Scale	Plan (8.5" x 14") (Port1)
RWMAPS	Used for ALL R/W Sheet Types w/ Auto - Title Block Annotation	Any Scale	Plan (Port1)



 © 2015 FDOT

The parameters for each sheet are defined in a Sheet Library. In order to layout or clip sheets, a Sheet Library must be attached to the current session. The name of the currently attached Sheet Library is shown in the title bar. Sheet Libraries have an extension of psl. An unlimited number of different sheets can be stored within one library. When the user begins the sheet process, the desired sheet library layout is selected from the attached library, which loads the associated parameters.

If a different Sheet Library is needed, it can be attached via the menu items **File > Sheet Library > Attach**. It is also possible to review or make changes to the Sheet Library by selecting **File > Sheet Library > Edit**. Detailed information on the set-up of the Sheet Library can be found in the online help section entitled "Sheet Library Set-up."



MAIN MENU BAR OVERVIEW

Four Plan Sheet Layout menu options are supported in the main menu bar:

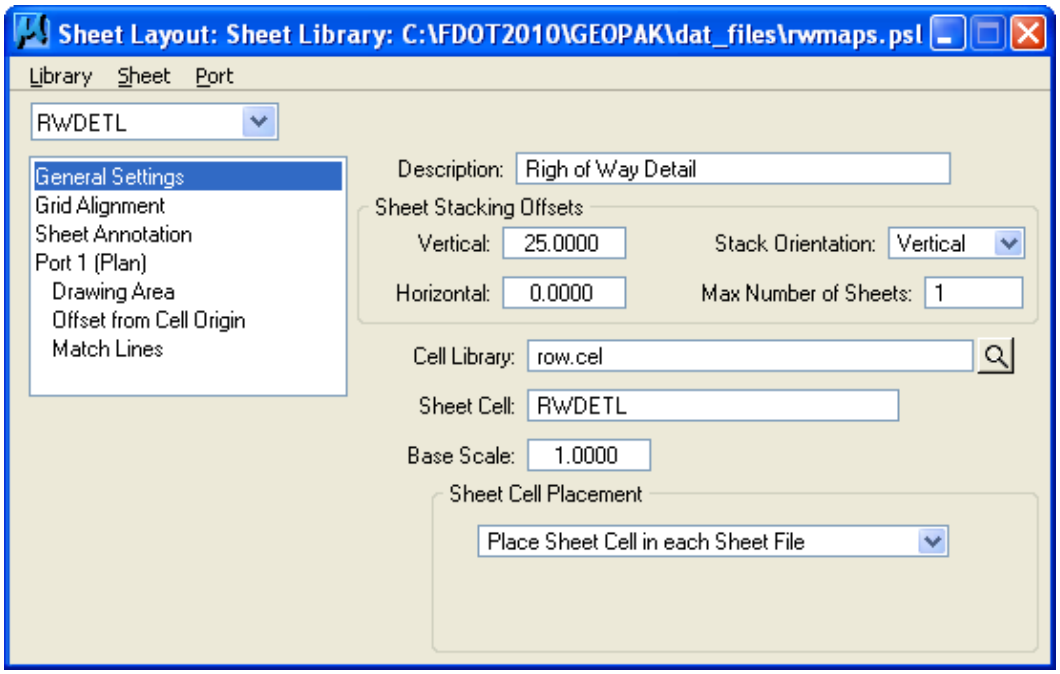
1. File Menu Options
2. View Menu Options
3. Settings Menu Options
4. Tools Menu Options

FILE MENU

Two tools are supported in the **File** pulldown and are detailed in the table.

- **Sheet Library**

The Library file contains the various parameters, cells, and dimensions for creating sheets. In this menu option, a new Library can be created, an existing Library can be edited, or the user can define (Attach) the desired Library. For a detailed discussion of setting up and editing a Library, refer to the online documentation "Sheet Library Set-Up."



- **Exit**

Exits the Plan and Profile Sheets application, but does not close the MicroStation file.

VIEW MENU

- **Filter by Sheet Name**

The clipping shapes of the currently selected sheet name are displayed. A MicroStation update view will need to be issued if "Automatic Update" is not toggled on.

- **Filter by Scale**

The clipping shapes of the currently selected Scale are displayed. A MicroStation update view will need to be issued if "Automatic Update" is not toggled on.

Note "Filter By Sheet Name" and "Filter By Scale" can be used together.

- **Automatic Update**

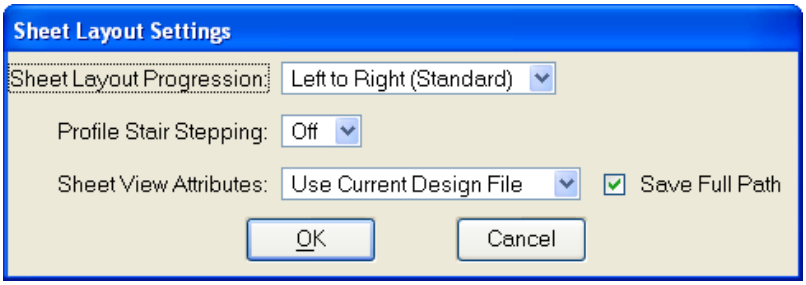
If this is toggled on when "Filter By Sheet Name" or "Filter By Scale" is selected the view is automatically updated.

 © 2015 FDOT

SETTINGS MENU

- **Sheet Layout**

When the **Sheet Layout** tool is selected, the dialog opens. Three settings are supported within the dialog including **Left to Right** or **Right to Left** layout, **Stair Stepping** for profiles, and **Sheet View Attributes**.



- ✓ Sheet Layout Progression:

  Left To Right (Standard)
  Right To Left (Rail)

- ✓ Profile Stair Stepping:

  Off
  On

- ✓ Sheet View Attributes:

  Use Current Design File
  Customize With Motif File

- ✓ The "Save Full Path" toggle applies to the Current Design file only.

TOOLS MENU

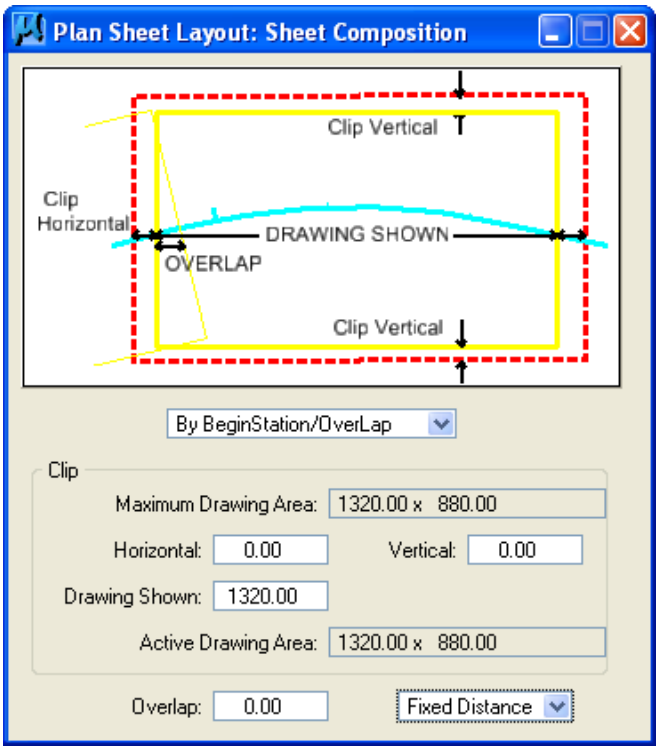
Eight tools are supported in the Tools pulldown and are detailed in the table.

- **Identify Sheet**

Select **Identify Sheet**, then select and accept a previously placed clipping shape. GEOPAK determines the settings utilized to place the original sheet and automatically populates the dialog with the **Sheet Name** and **Scale**. In addition, the **Sheet Name**, **Scale**, **Sheet Number**, and **Port** are displayed in the MicroStation prompt field at the bottom of the screen. If the parameters for the selected sheet are not found within the current library, a warning message is displayed indicating the sheet is not found, the name of the current library, and the name of the library used to place the original sheet.

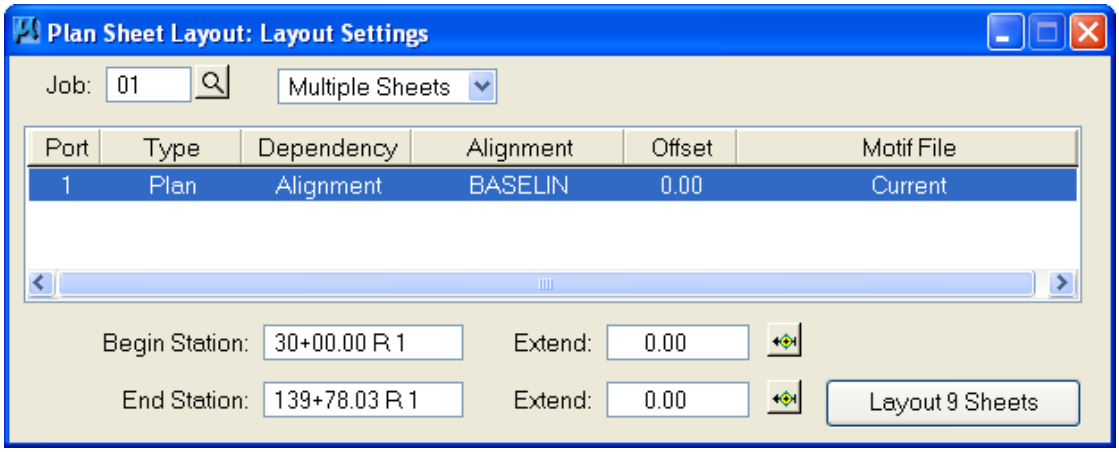
- **Sheet Composition**

This menu item opens the **Sheet Composition** dialog, wherein drawing area, overlapping options and other project specific variables are defined. One sample dialog is shown next.



- **Sheet Layout**

The **Layout Settings** dialog is utilized to define the GEOPAK Job Number, alignments, and /or profiles for the desired sheets. Fields are also supported for stationing, if only part of the chain is being utilized for sheet layout.



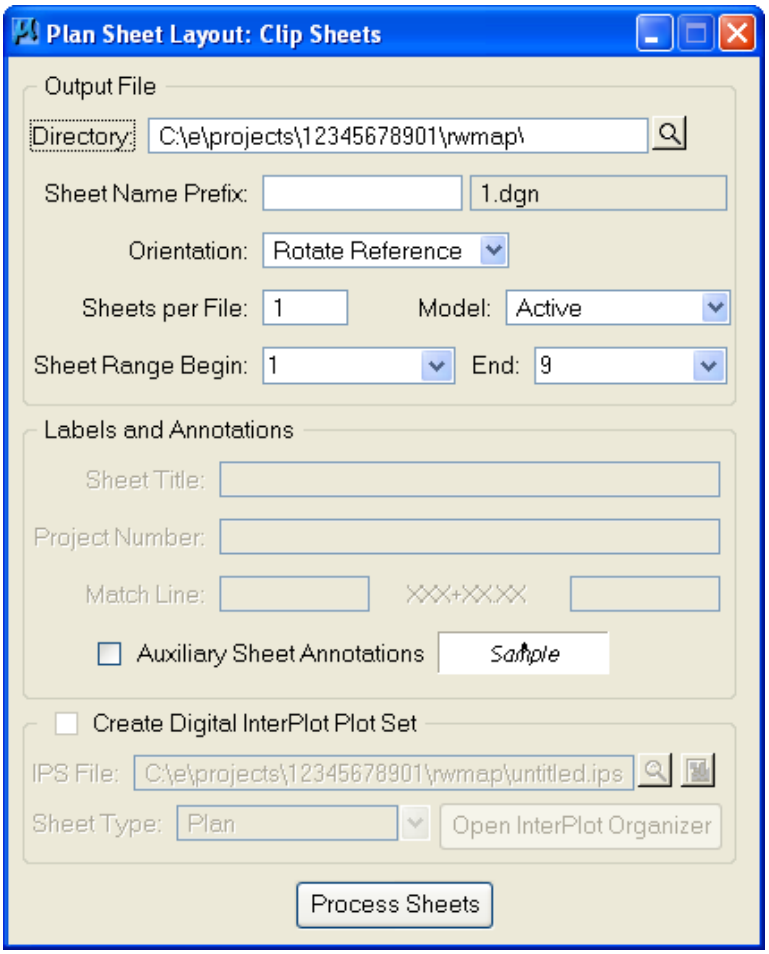
 © 2015 FDOT

- **Sheet Clip**

Once the sheets have been laid out and any modifications complete, the sheets are ready to be clipped and drawn for the final production sheets. The clip dialog is utilized to complete these tasks.

In addition to clipping sheets, attaching reference files, and placing borders, the clipping dialog also has options for placing a Sheet Title, Project Number, Match Lines, and Auxiliary Sheet Annotations.

✓ *Create Digital InterPlot Plot Set* - Allows the creation of the Digital InterPlot Plot Set during the Layout Sheets process.



- Modify Sheets

After the clipping shapes have been drawn, the user may want to modify or adjust some shapes prior to final drawing. This can be done on plan, profile, or tabular data sheets.

- Sheet Number Manager

After the clipping shapes have been placed, the user has the option to adjust the sequence of sheets or their numbers. This is accomplished in the Sheet Number Manager.

- Draw Tabular Annotation (Sheet Clip Mode)

The user can define the tabular data to be included within the plan /profile sheets.

DIALOG ICONS

Six short-cut icons are supported for ease of use. These icons correspond to tools located within the menu bar and are detailed in the table.

Sheet Composition (Tools > Sheet Composition).

Layout Sheets (Tools > Sheet Layout).

Clip Sheets (Tools > Sheet Clip).

Modify Sheets (Tools > Sheet Modify).

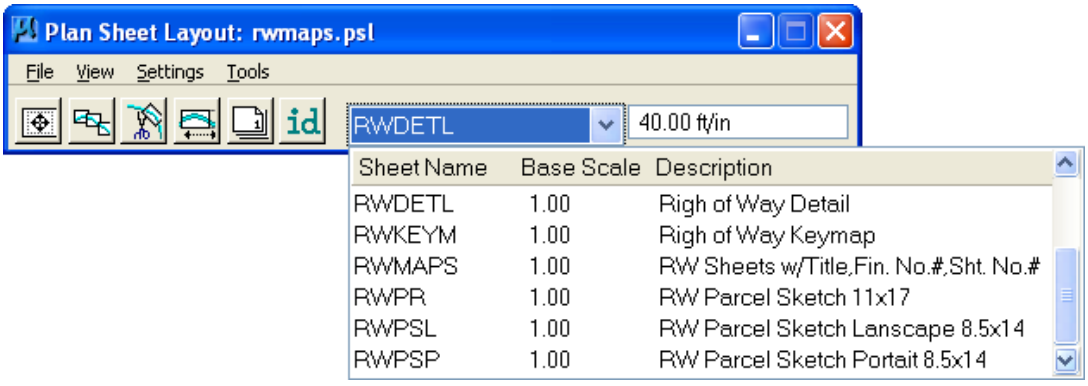
Sheet Number Manager (Tools > Sheet Number Manager).

ID button (Tools > Identify Sheet).

SHEET NAME SELECTOR AND PLOT SCALE

Two parameters are global to the entire application and are shown on the main dialog:

- **Sheet Name Selector** Enables the user to select which sheet is to be placed in the next Layout operation. The drop down list displays all sheets in the currently attached Sheet Library.
- **Plot Scale** Text item determines the scale at which sheets will be placed in the *layout.dgn*.



 © 2015 FDOT

PRIMARY WORK FLOW

The approach taken by this application is to represent the reference-clipping boundary of each port on each sheet. The clipping boundary is represented by MicroStation Shapes, referred to as Clipping Shapes.

For each project, there is one design file which contains all of the clipping shapes for a project, for example, *layout.dgn*. All design elements exist in files referenced to *layout.dgn*. It is recommended that layout.dgn have only clipping shapes in it.

The primary work flow consists of two operations:

- **Layout of sheets** – places clipping shapes into *layout.dgn* file.
- **Clipping sheets** – reads the clipping shapes from the *layout dgn* and creates new design files which include all required reference files which are clipped at the correct boundaries along with the Sheet Cell and other annotations.

There are two options for Clipping Sheets: Rotate View and Rotate Reference.

When sheets are clipped using the Rotate View option, the sheet cell and the view are moved and rotated such that they are coordinately correct with the clipping shape of Port One. This arrangement allows only one sheet per design file.

When sheets are clipped using the Rotate Reference option, the sheet cell and view are not rotated. The reference files are rotated and moved to be in the correct location with respect to the sheet cell. The arrangement allows multiple sheets to be placed in one design file.

USE CURRENT DESIGN FILE

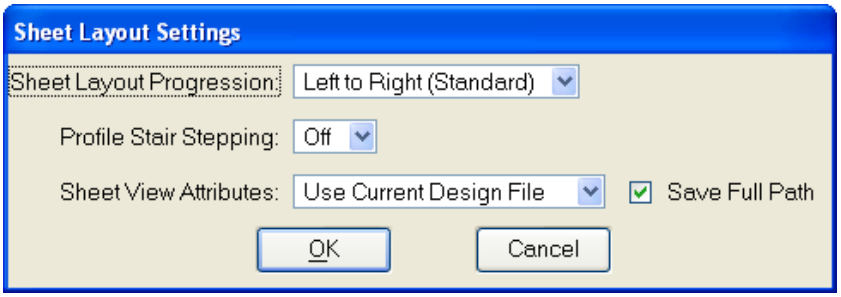
The user can control reference file attachment without the use of Motif Files by selecting the Use Current option for Sheet View Attributes. When this option is used, the Current dgn file (in which clipping shapes have been laid out) is used like a Motif file in that its reference file attachment information carries over to each Port during Clipping.

Also the design file containing the clipping shapes will be attached as a reference file for each port to accommodate users that wish to place their clipping shapes in the proposed design file.

The advantage of Use Current Design File is that the user does not need to concern themselves with setting up motif files. What they see in the layout design file is what they will get in clipped sheet files. However, when the Use Current Design File is the selected option, it is not possible to have different reference file settings for different ports on the same sheet. All ports must have the same attachment information and can't be customized.

The Save Full Path toggle is used when the sheets will be placed in a different directory than the reference files.

Note If the sheets are to be placed in a different directory, then the reference files must be attached to the current design file with "Save Full Path" toggled on.

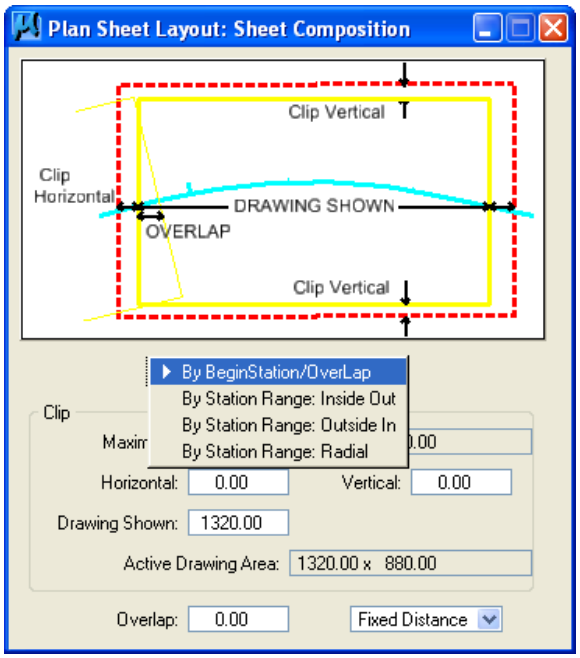


SHEET COMPOSITION

When the Sheet Composition tool is accessed, the Plan Sheet Layout: Sheet Composition dialog opens.

The graphic illustrates the various values required in the dialog. Directly below, four options are supported, as shown above:

- By Begin Station/Overlap
- By Station Range: Inside Out
- By Station Range: Outside In
- By Station Range: Radial

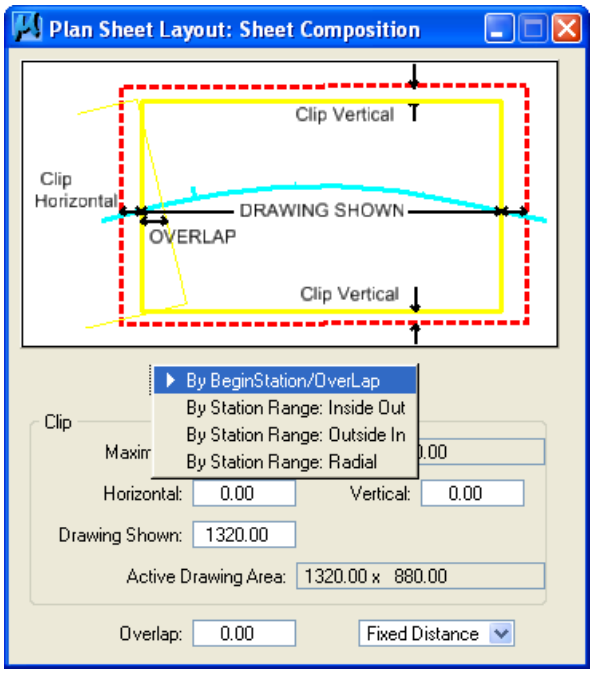


BY BEGIN STATION/OVERLAP OPTION

When the **By Begin Station/Overlap** option is selected, the Clip group box containing the Drawing parameters, Overlap options and associated fields as depicted next:

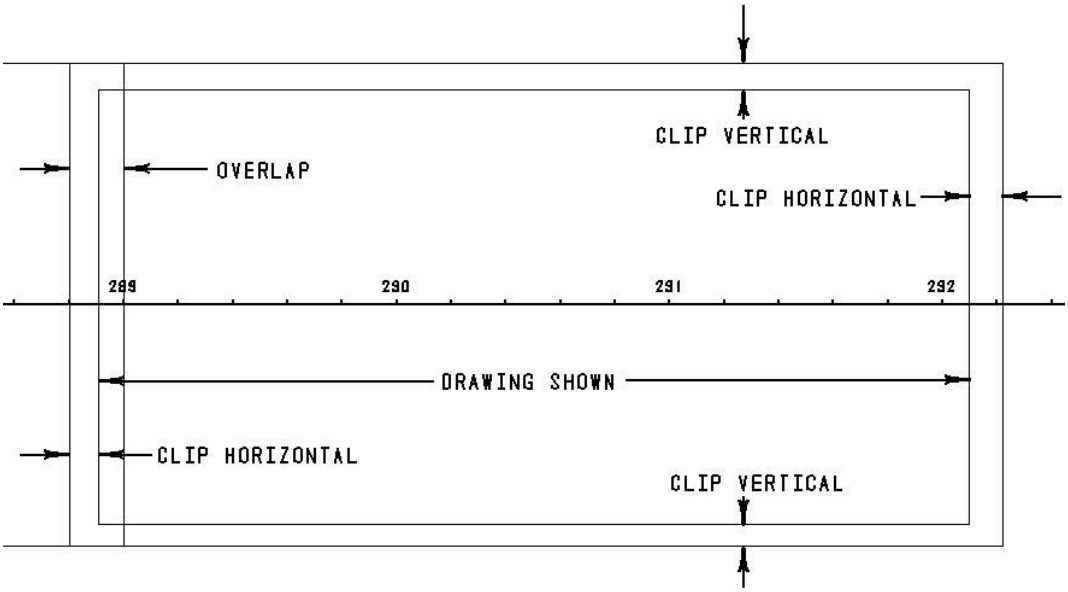
Before these options are reviewed, a discussion of the **Active Drawing Area**, located within the **Clip** group box, is warranted. Several dimensions are found within the **Clip** group box. These include:

- Maximum Drawing Area (display only)
- Horizontal
- Drawing Shown
- Vertical
- Active Drawing Area (display only, calculated by GEOPAK)



© 2015 FDOT

The next graphic illustrates each dimension for the subject sheet. In addition, a portion of the adjoining sheet to the left is shown in order to depict the overlap. Notice that the alignment is also displayed from approximately station 289+00 to 292+00.



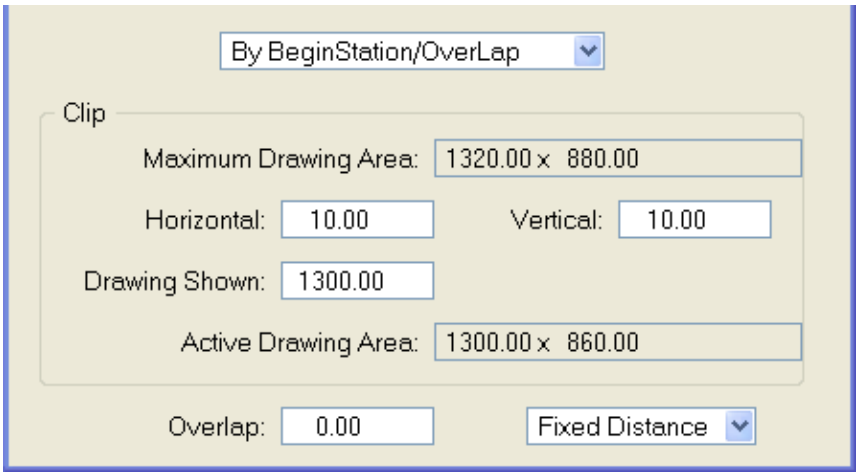
First, GEOPAK utilizes the Maximum Drawing Area based on the Sheet Name and Scale selected in the main Sheet Layout dialog, in our example, 1320 x 880. Then the Clip **Vertical** is subtracted twice, once for the top and once for the bottom. In this case,

$$880 - 10 - 10 = 860$$

is shown in the **Active Drawing Area**. The same method is utilized for the Horizontal computations. The horizontal clip is subtracted twice, once for the right side and once for the left side. In this case,

$$1320 - 10 - 10 = 1300$$

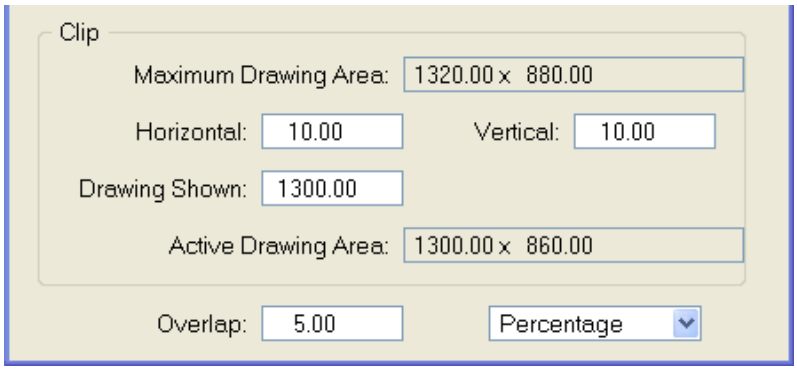
is shown in the **Drawing Shown** and the **Active Drawing Area**.



 © 2015 FDOT

Once again referring to the example above, GEOPAK considers the Overlap shown on the left side between the two adjoining sheets. The **Overlap** toggle has two options as depicted in the next view:

- Percentage
- Fixed Distance

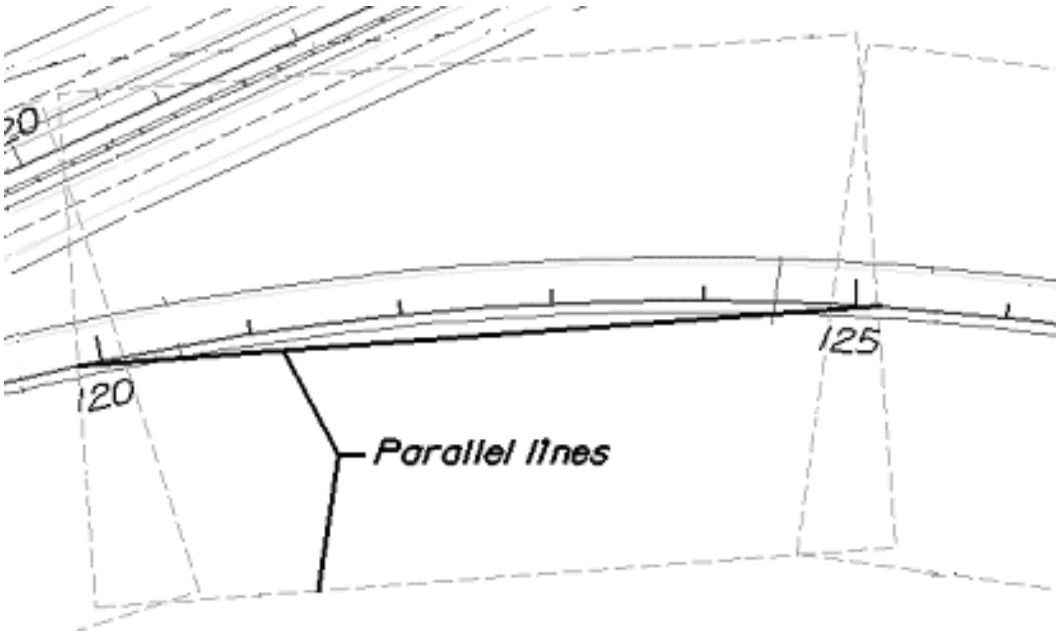


When the **Percent** option is selected, the designer keys in the desired overlap in percent format in the **Overlap** field. Note the percent sign (%) is not required. The Percentage is calculated utilizing the Drawing Shown value. In this example, the 5.26% overlap is 156.75 feet (5.26% of 176.75).

In our Percentage example, the overlap is 5.26%. Therefore, a 20.00 foot overlap in clip areas is present between successive sheets.

If the **Fixed Distance** option is utilized, the Value field is in master units, i.e. feet or meters.

When placing sheets on a curve, the chord of the curve where it intersects the inside border is utilized to orient the sheet as depicted next:

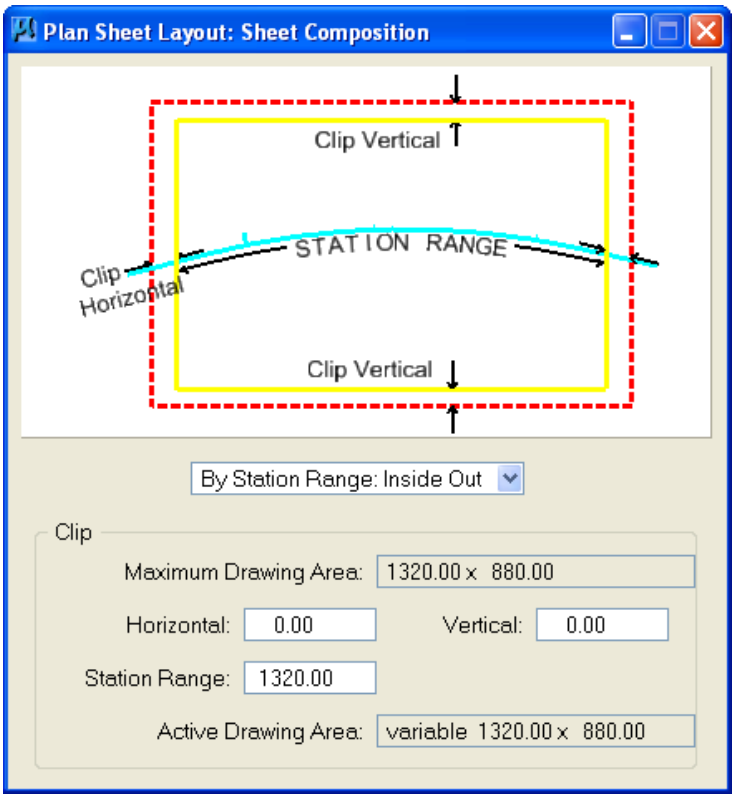


Since the **By Begin Station/Overlap** Sheet Composition option uses a chord distance to compute the length of the sheet, in the area of a curve more stationing will be covered. On a Plan/Profile sheet, this means there will be unequal coverage between the Plan and Profile. With this in mind, it is recommended that **By Begin Station/Overlap** Sheet Composition option be used for a Plan only case.

 © 2015 FDOT

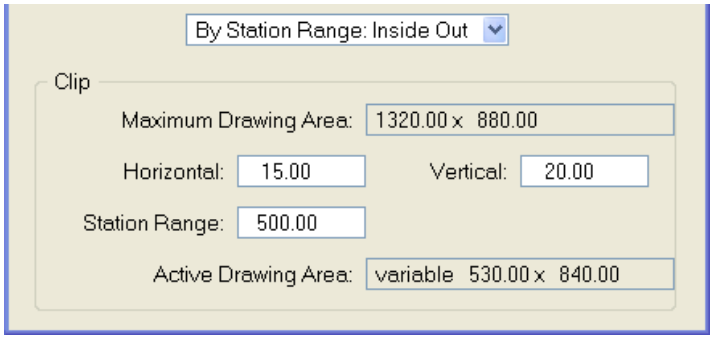
BY STATION RANGE: INSIDE OUT OPTION

The **By Station Range: Inside Out** option orients sheets between a rounded station interval. This interval is entered in the **Station Range** field. When utilizing this option, the Clip group box also has a slightly different look as shown next.



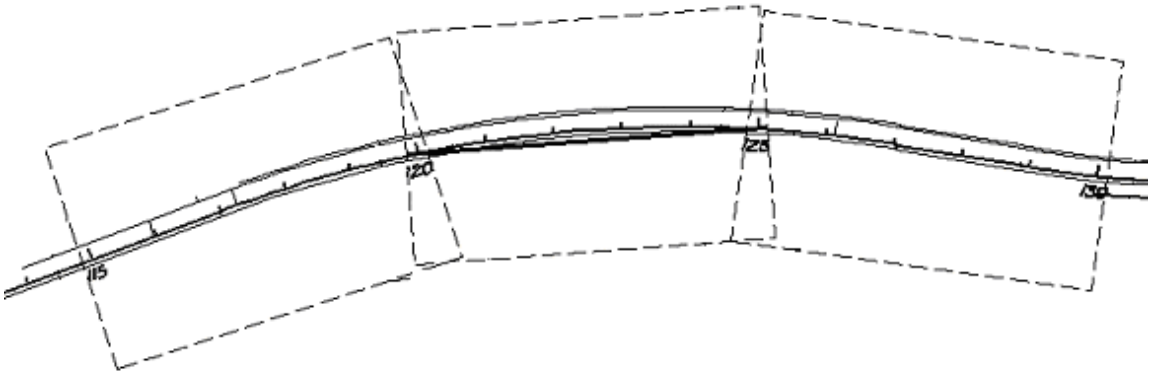
Now the **Active Drawing Area** is not constant, but displays **Variable** in the output field.

The **Horizontal** key-in has a slightly different meaning which can be best illustrated with an example. Let's use 500 feet for the **Station Range**, and 15 feet **Horizontal**. The dialog is shown next.

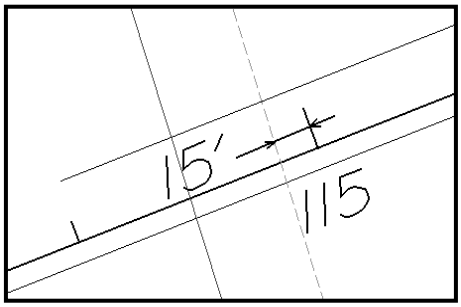


 © 2015 FDOT

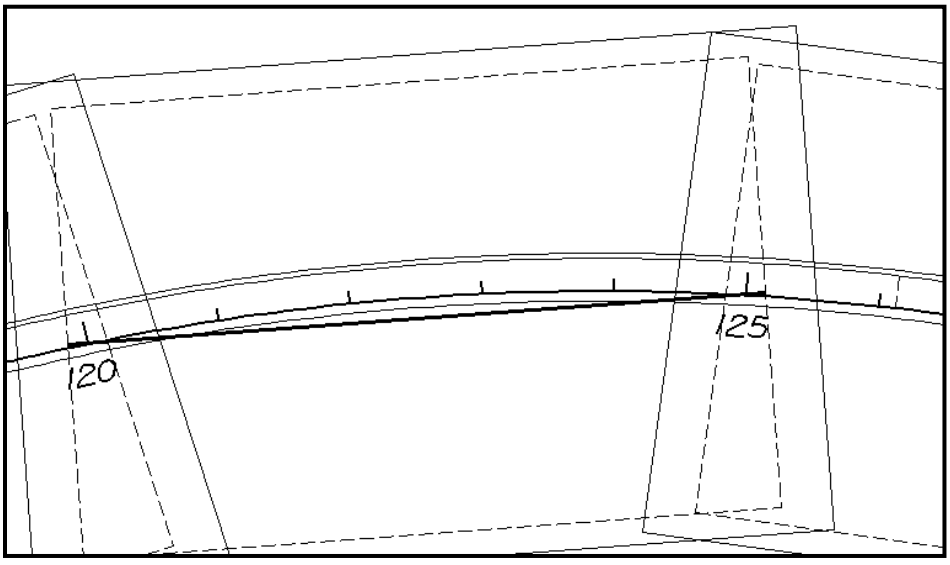
Utilizing the dialog above, the following sheets are generated.



The first step when the sheets are drawn is to determine the stationing for each sheet. Our first sheet will be oriented between stations 115+00 to 120+00. GEOPAK then expands the sheet clip area by the **Horizontal** key-in distance. Looking at a detail of the beginning of the project, the clip area is expanded fifteen feet before station 115+00 as seen in the next graphic. Note the inside border is the dashed line, and station 115+00 and its associated tick mark are shown.

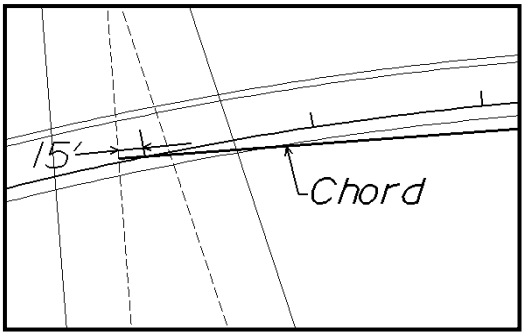


The curve is calculated slightly different. The second sheet in this series is on a curve. The station range is 120+00 to 125+00. A chord is drawn for the curve between stations 120+00 and 125+00 as seen in the next graphic.



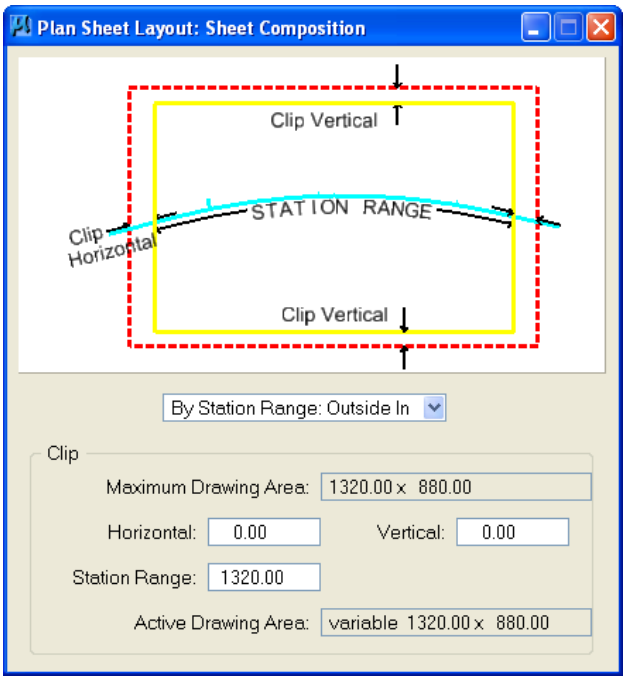
 © 2015 FDOT

Notice that the inside sheet border is wider than the chord. The software will extend the chord the amount of the Horizontal keyin (in our example, fifteen feet) to establish the vertical edge of the inside border as seen in the detail shown.

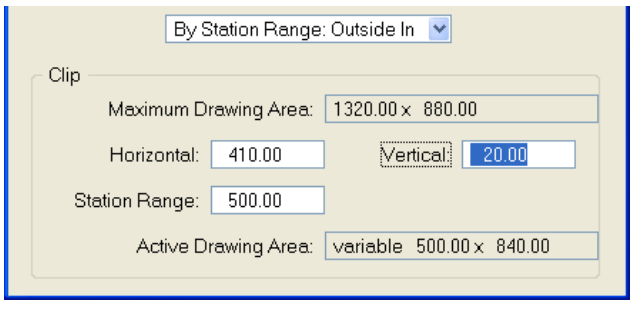


BY STATION RANGE: OUTSIDE IN OPTION

The **By Station Range: Outside In** option orients sheets between a rounded station interval. This interval is entered in the **Station Range** field. When utilizing this option, the Clip group box also has a slightly different look as seen in the next graphic.

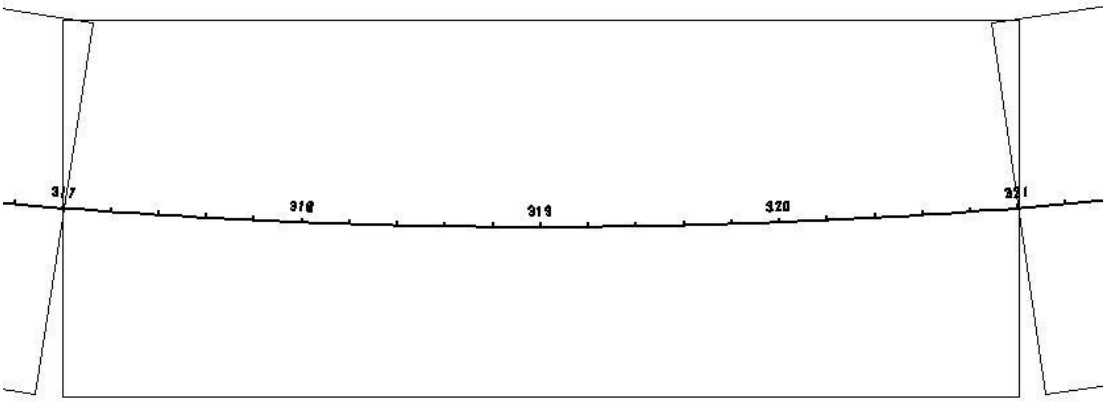


The **Outside In** option is slightly different as shown in the dialog.



 © 2015 FDOT

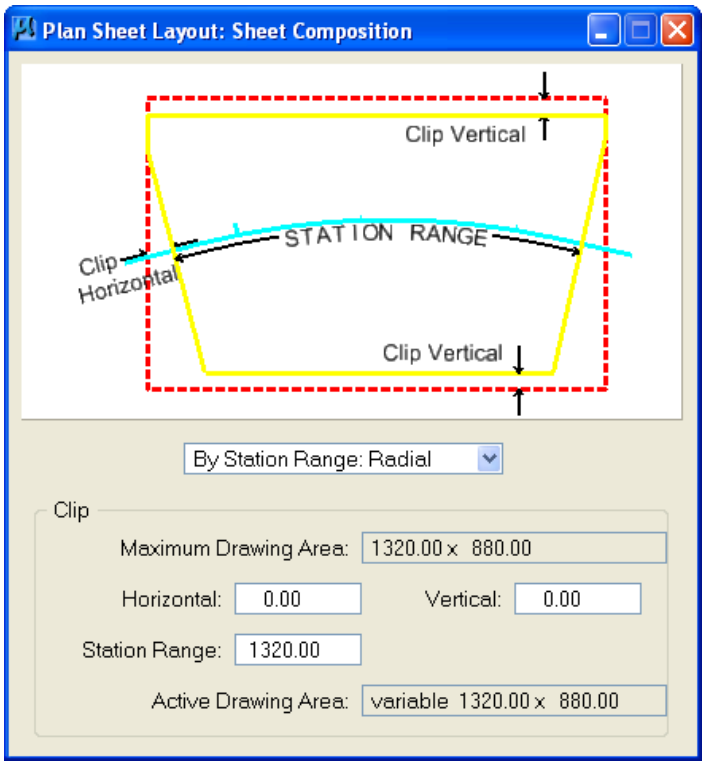
The Clip Area is no longer variable, but a constant based on the **Sheet Size** as well as the **Horizontal** and **Vertical** fields. In our example, the same 500 feet is keyed in. When generating the sheets, GEOPAK determines the center of the sheet, and the corresponding station. In our example the midpoint of the stationing for the sheet from 120+00 to 125+00 is 122+50. This point will be placed at the midpoint of the sheet as depicted in the next drawing:



Since the clip area covers a constant station range, the length of the clipping shape will vary depending on the curvature of the alignment.

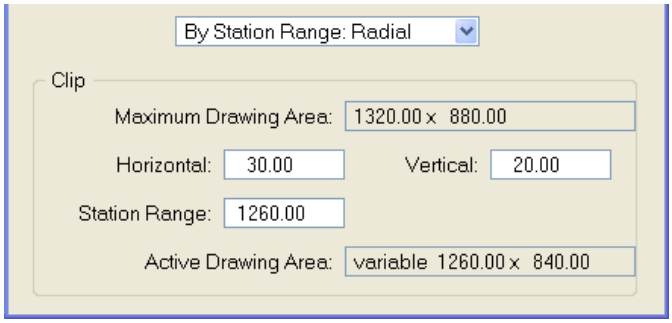
BY STATION: RADIAL OPTION

The **By Station Range: Radial** option orients sheets between a rounded station interval. This interval is entered in the **Station Range** field.



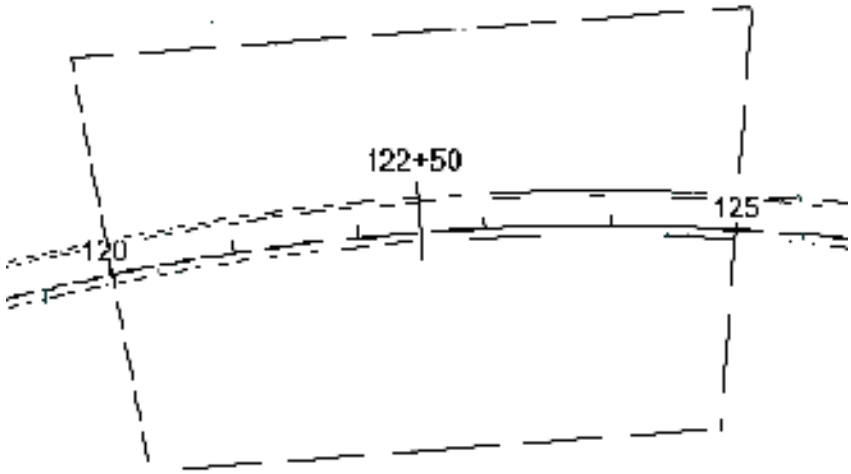
 © 2015 FDOT

An example best describes how this feature works. In the dialog shown, each sheet has a station range of 1260 feet. Based on the station ranges in the bottom of the dialog, the first sheet would encompass station 120+00 to 132+60, while the second sheet would include stations 132+60 to 145+20.



To draw this second sheet, GEOPAK locates the midpoint station 122+50, which in our example is on a curve. Utilizing the chord of curve as the vertical center, GEOPAK draws the top and bottom of the clip regions 420 from the chord, making the clip region 840 feet high. This is computed from the sheet size of 880 minus the vertical keyin of 20 for the top and 20 for the bottom, resulting in a 840 feet height.

In the next step, GEOPAK moves to station 132+60 and draws the clip border radial to the alignment at the specified station until it intersects with the previously computed top and bottom clip regions. The same process is repeated at the other end of the sheet, i.e., 145+20. Therefore, the inside clip region is trapezoidal as depicted in the next graphic.



Since the clip area covers a constant station range, the length of the clipping shape will vary depending on the curvature of the alignment.

 © 2015 FDOT

Exercise 13.1 Creating RW Detail Sheets

➢ ***In this exercise the user will learn how to create RW Detail sheets from the RW Main DGN file.***

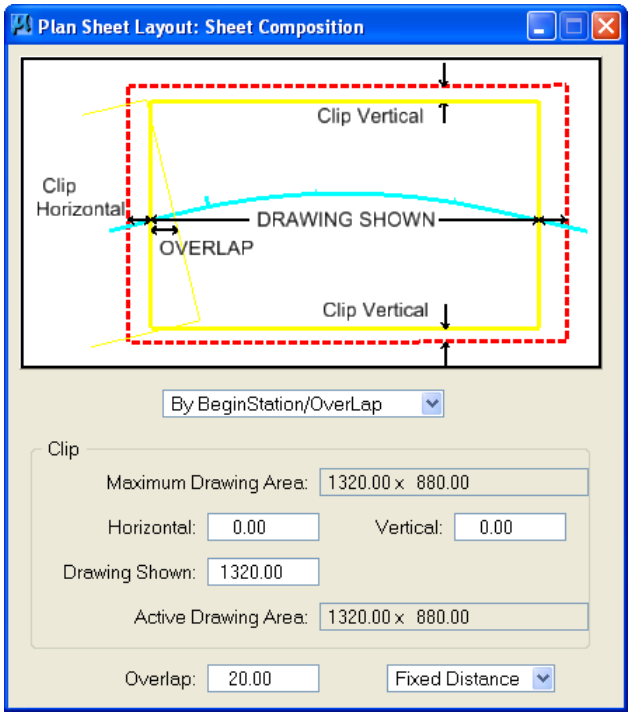
1. Open the MicroStation file c:\E\Projects\12345678901\rwmap*RW1234567_FINSHED.dgn* for this exercise.

> ***Note*** The TOPO file should already be Referenced to the RW1234567_FINISHED file. This file is being used to ensure consistency throughout the class. Normally the RW1234567.dgn file would be used for Sheet Clipping.

2. From the MicroStation menu, select **Applications > GEOPAK ROAD > Plans Preparation > Plan/Profile Sheet Composition**.

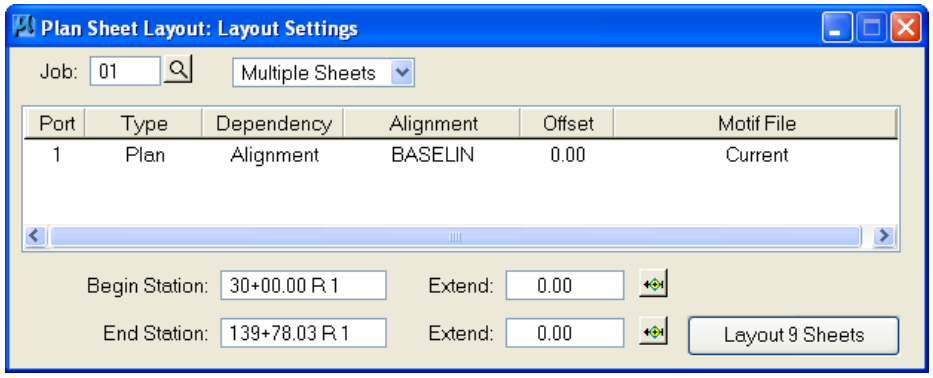
3. Using the *Sheet Name* pull-down arrow, select **RWDETL** and set the *Scale* to be **40 ft/in** as shown.

4. Click the **Sheet Composition** button to display the Sheet Composition dialog and set the *Sheet Composition* as shown. Click the upper right corner to close the dialog.



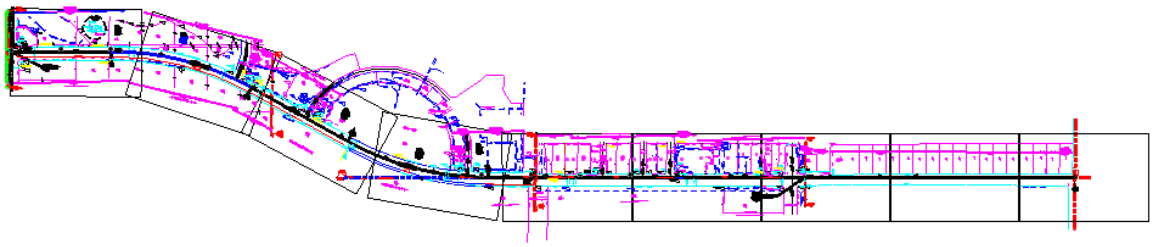
 © 2015 FDOT

5. Click the **Layout Sheet** button to display the Layout Settings dialog. Match the settings as shown below.

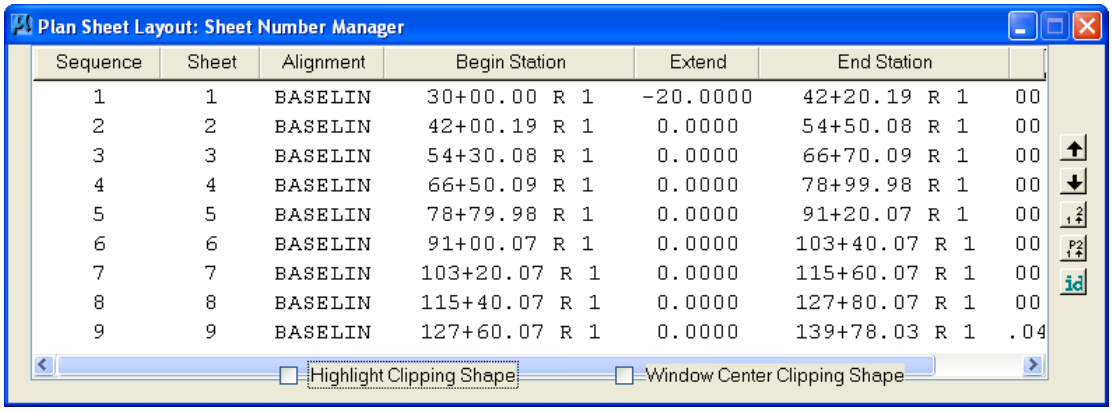


Note If necessary, double-click the **Port 1** line in the dialog to change the **Alignment** to **BASELIN** and click the browse icon to pick **Job 01**.

6. Click the **Layout 9 Sheets** button. 9 clip borders will be placed in the *RW1234567.dgn* file as shown.

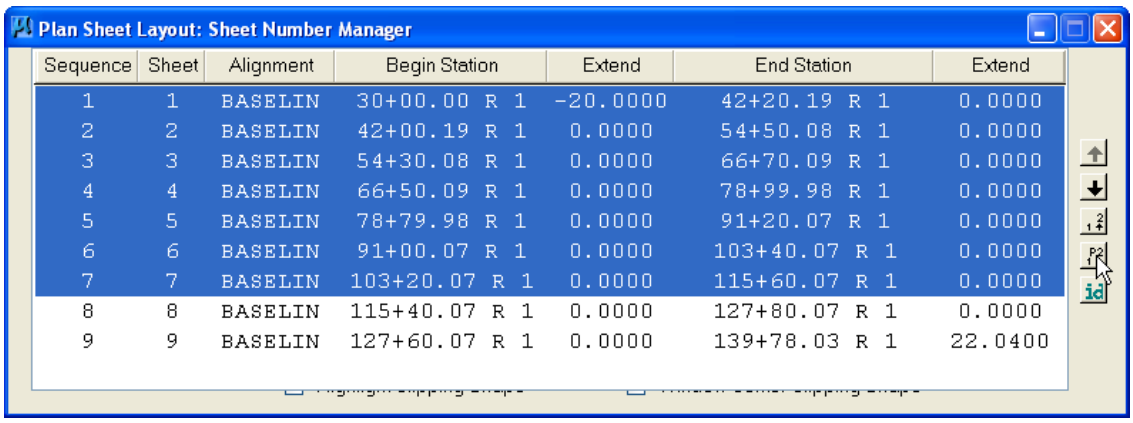


7. Click the **Sheet Number Manager** icon. This will bring up the dialog shown below.

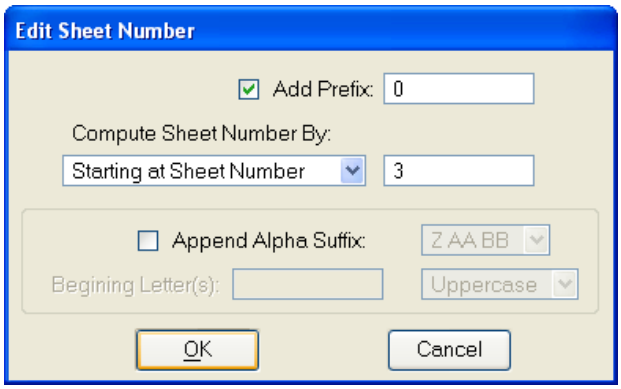


 © 2015 FDOT

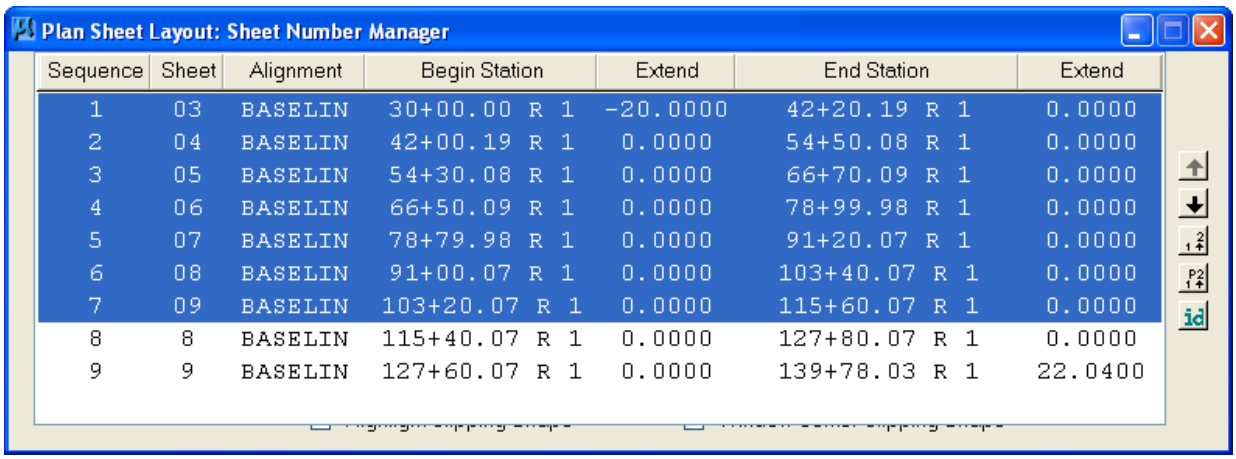
8. Highlight the first seven (7) sheets and then click the **Edit Sheet Number** icon as indicated by the cursor below.



9. The **Edit Sheet Number** dialog displays, which enables the user to start the *Sheet Numbers* at **03**. Match the settings as shown below and click **OK**.

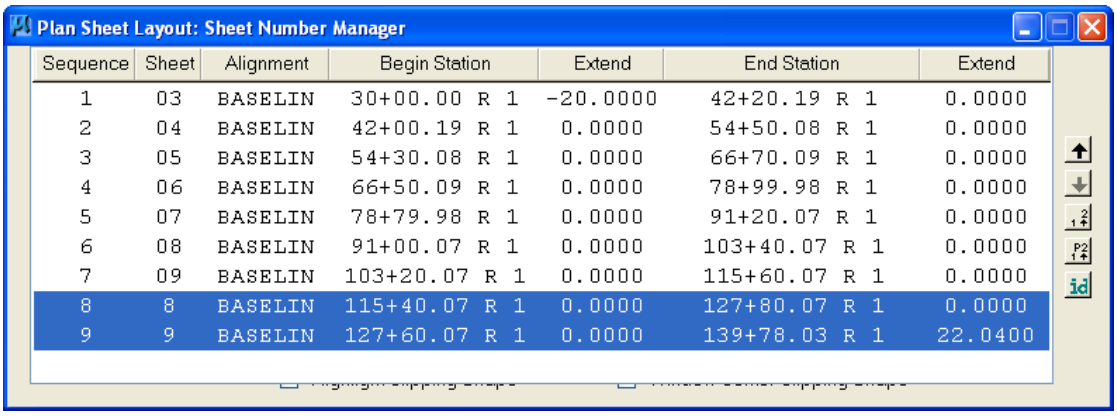


10. The first seven (7) Sheets will now be renumbered as shown below.

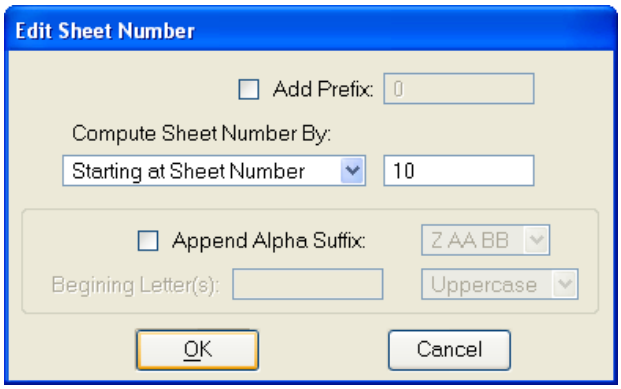


 © 2015 FDOT

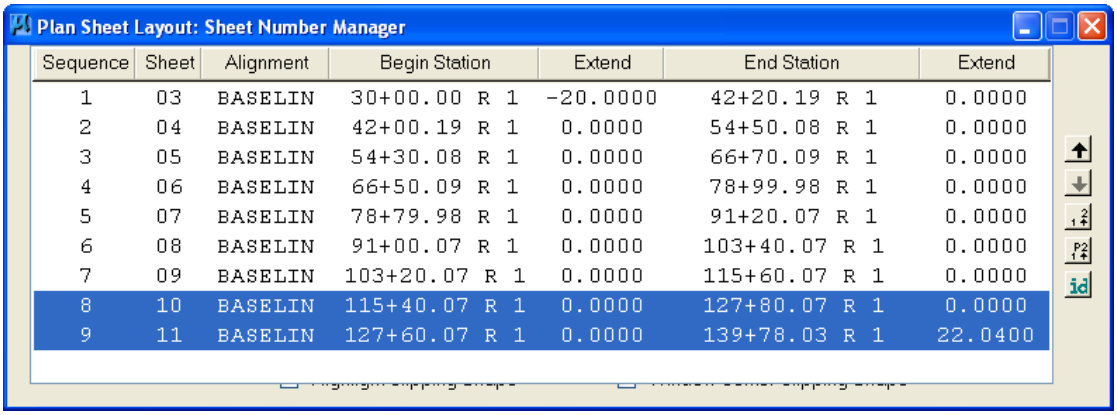
11. Now highlight the last two (2) sheets as shown below and again click the **Edit Sheet Number** to renumber the last two (2) Sheets.



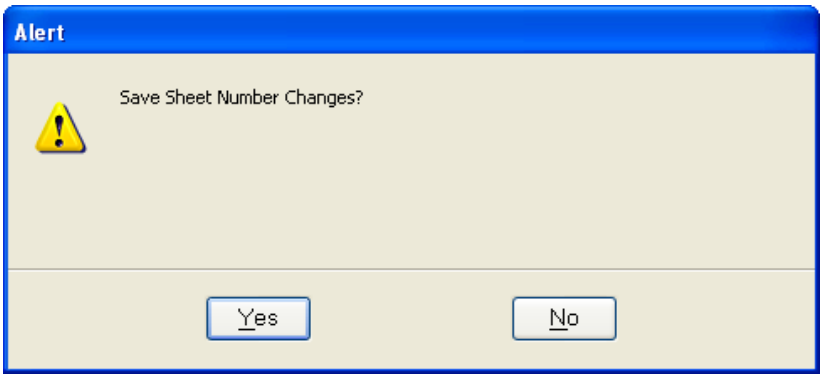
12. Match the settings shown below in the Edit Sheet Number dialog and click **OK**. The last two (2) sheets will be renumbered started at *Sheet Number* **10**.



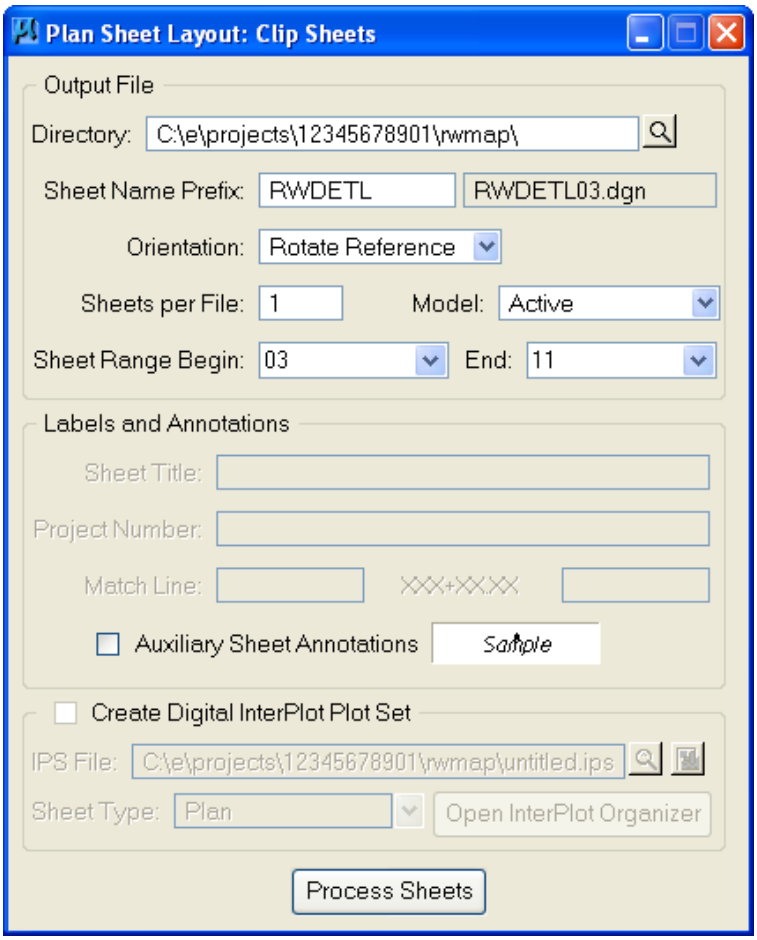
13. Now all sheets are numbered in the correct sequence starting at *Sheet Number 03*. This will allow room for the *Cover Sheet* and the *Key Sheet* in the RW Map set. Close the Sheet Number Manager dialog and click **Yes** to save the *Sheet Number Changes*.



 © 2015 FDOT



14. Click the **Clip Sheets** button to display the Clip Sheets dialog and match the settings shown below. Click the **Process Sheets** button to create the nine **RWDETL** files. Once the process is completed take some time to look over the **RWDETL** sheets that have been created.



15. Exit MicroStation

 © 2015 FDOT

 © 2015 FDOT

14 RIGHT OF WAY SHEET LABELING

OBJECTIVES

This chapter will review the Sheet Navigator tool for labeling the various RW Sheets created during the mapping process. Items covered will include:

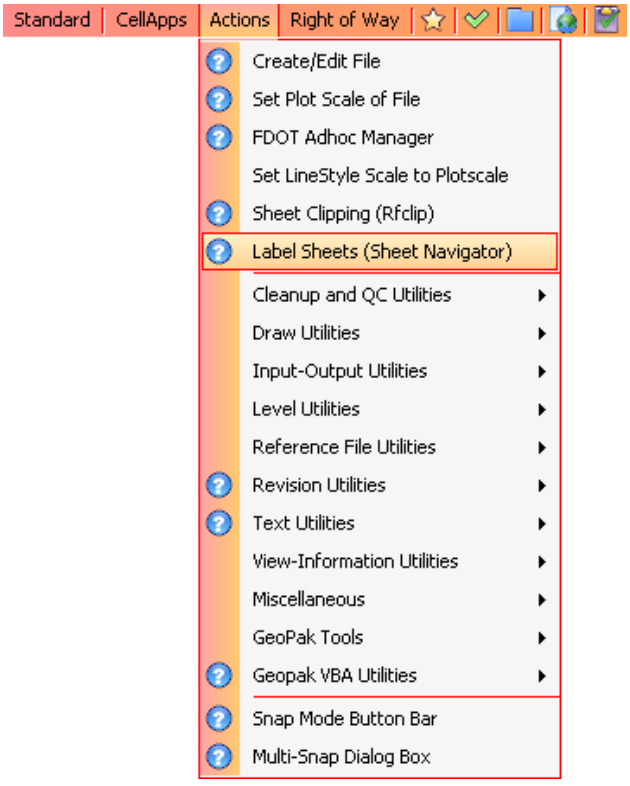
- Initializing Sheet Navigator
- Sheet Navigator Basics

INTRODUCTION

Sheet Navigator browser is a user interface that allows a user to easily browse and open Sheet Index files. Sheet Navigator also contains a utility to create the sheet index files at either a Project or Component (Discipline) level. Sheet Navigator's utility searches a project or discipline directory structure and creates an XML file containing information about the FDOT Sheet files it finds. This XML file, SheetInfo.xml, is then used to recognize, browse, and label the sheet borders in the project or discipline.

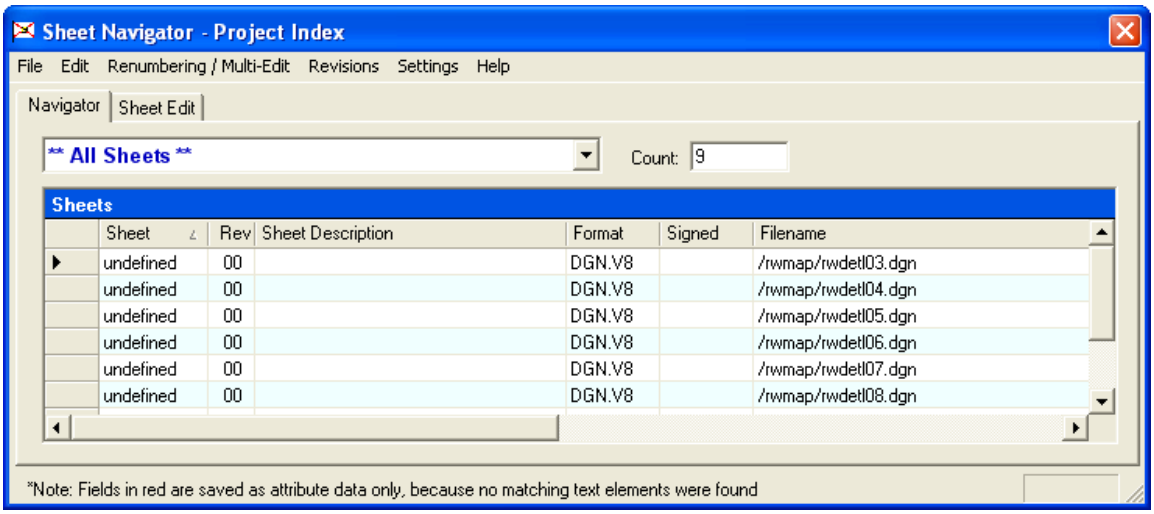
INITIALIZING SHEET NAVIGATOR

Access to Sheet Navigator is provided through the Right of Way FDOT Menu under **Actions**. To access Sheet Navigator, select **Actions** > **Label Sheets (**Sheet Navigator**)** from the Right of Way FDOT Menu.

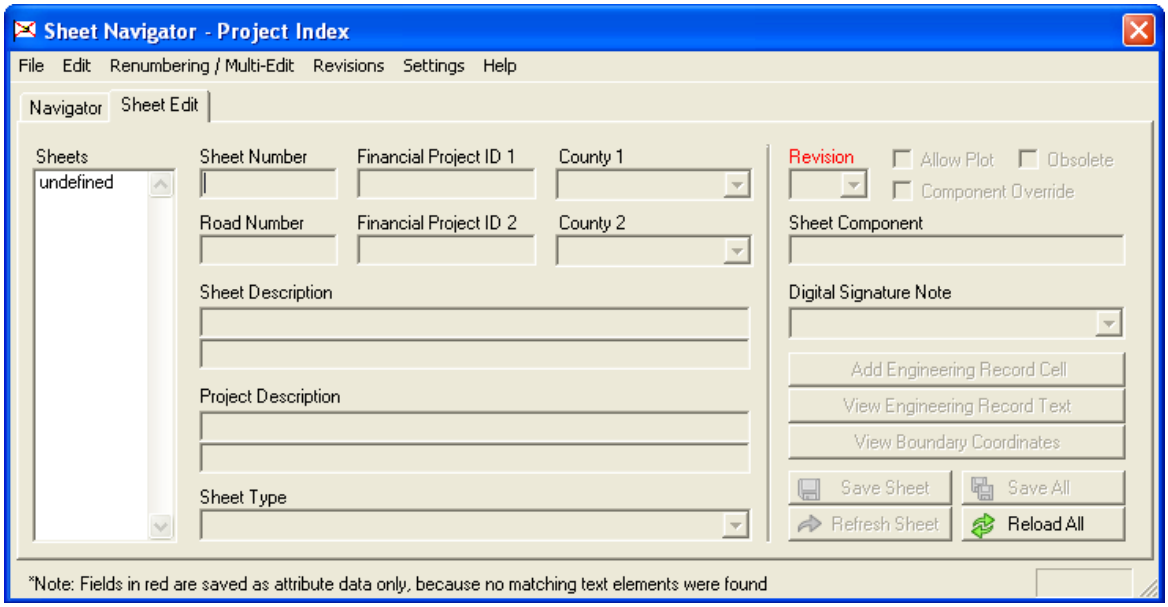


© 2015 FDOT

This will open the Sheet Navigator dialog to the *Navigator* tab which allows the user to easily navigate between sheets once the Sheet Index file is created.



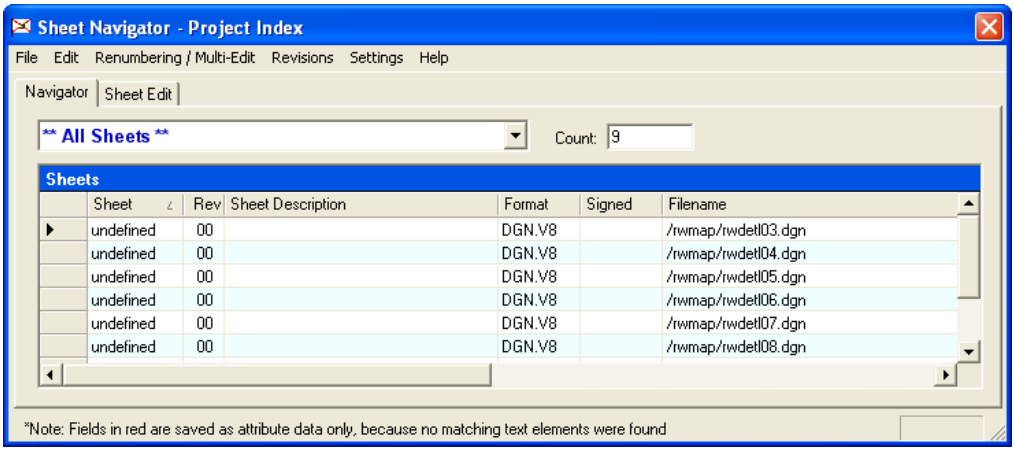
The *Sheet Edit* tab allows the user to enter and edit sheet information. *Sheet Edit* allows the user to enter sheet information individually or as a group.



 © 2015 FDOT

SHEET NAVIGATOR BASICS

NAVIGATOR TAB



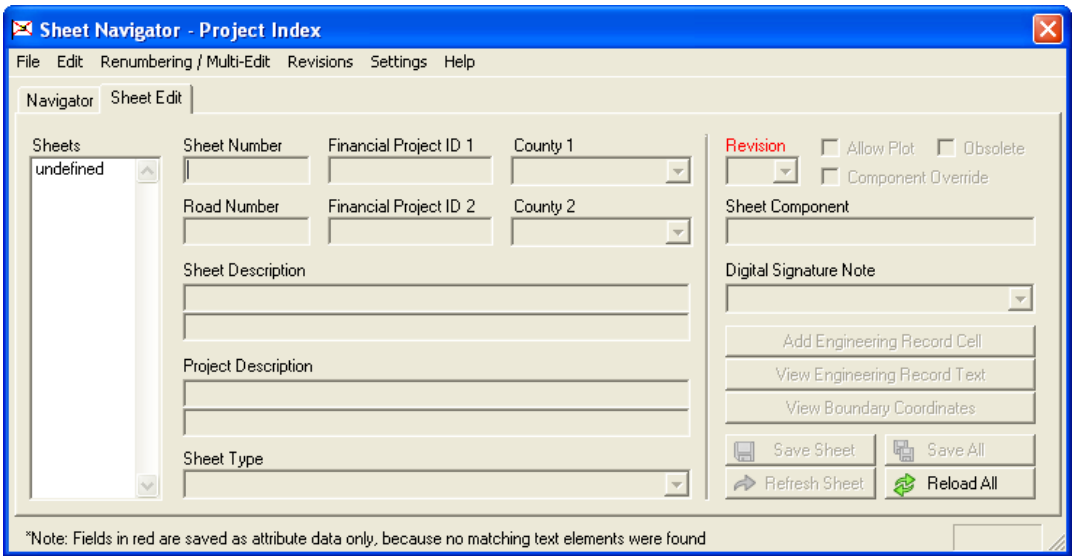
- OPENING DESIGN FILES:
    3. From within MicroStation run SheetInfo.
    4. If an index is not already loaded, Select File > Open from the SheetInfo menu, then browse to and select a project index file.
    5. Select the Category or Discipline of the Sheet you are trying to locate from the Key Sheet Categories list.
    6. Highlight the Sheet you would like to view.
    7. Direct MicroStation to open the file by double-clicking on it, or pressing 'Enter.'
- OPENING AN INDEX FILE:
    1. Select File > Open Index File from the Main Menu.
    2. Browse to the desired index (SheetInfo.xml) and select it.
    3. Press the OK button to open the index.
- CREATING AN INDEX FILE:
    1. Select File > New… from the Main Menu.
    2. Browse to the directory you would like to create an index for.
    3. Make sure that the SheetInfo.xml file name is displayed in the filename field.
    4. Press the Save button. A second session of MicroStation will be opened and a text window will display of the current file that is being processed. When the process has finished a message box will display notifying the user that the index has been created.

 © 2015 FDOT

MENU SELECTIONS

- **File > New** Launches the process that creates a new index of an existing FDOT project folder.
- **File > Open** Opens an index of an existing FDOT project folder.
- **File > Options** Allows the user to change certain program settings
- **File > Save Settings On Exit** Toggles the feature that saves settings on exit on and off so that the last index automatically loads when the program starts the next time.
- **File > Exit** Closes the program.
- **View > All Sheets** Displays all sheet without breaking them down by category.
- **View > By Category** Displays sheet broken down by category.
- **View > Single Sheet** Displays the specific information about the current sheet and allows the user to modify it.
- **Help > Contents** Display a Help dialog.
- **Help > About** Display a dialog with version information.

SHEET EDIT TAB



Description of the fill-in fields of the SheetInfo dialog.

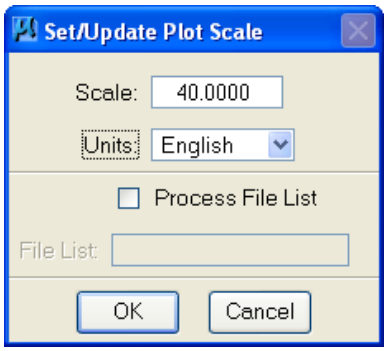
- **Sheet Number** Fills-in the sheet number of the currently selected sheet cell.
- **County** Fills-in the county name of the currently selected sheet cell.
- **Financial Project ID** Fills-in the Financial Project ID of the currently selected sheet cell.
- **Road Number** Fills-in the road number of the currently selected sheet cell.
- **Description** Fills-in the description of the currently selected sheet cell, either **Single** or **Multi Line** (2 Line) descriptions.

Note For more complete information on Sheet Navigator see the online training available at – http://fdot.prosoftnet.com/

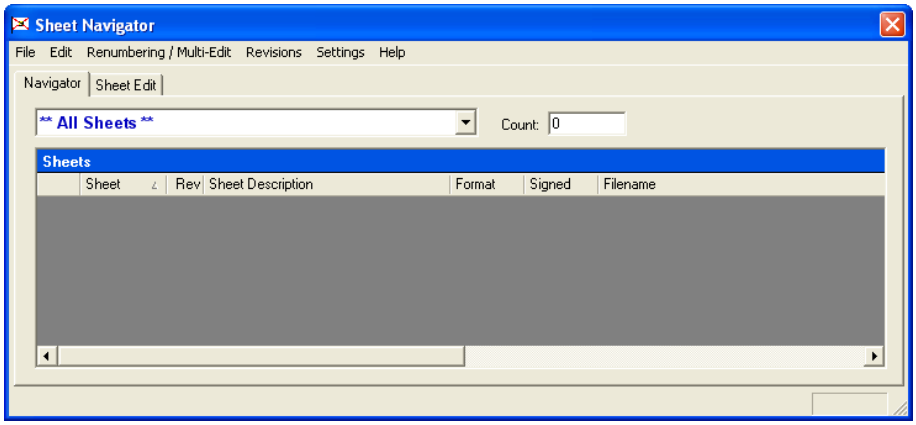
Exercise 14.1 Using Sheet Navigator

➢ ***In this exercise the user will learn how to use Sheet Navigator.***

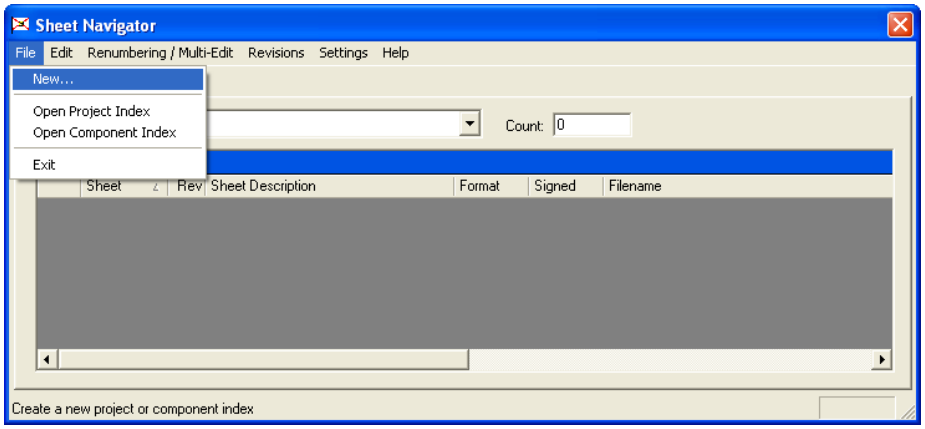
1. Open MicroStation using the FDOT2010 XM icon on the Desktop. As an alternative, launch MicroStation from the FDOT2010 folder on the Windows Start menu.
2. Open the DGN file C:\E\Projects\12345678901\rwmap*rw1234567.dgn*.
3. From the Right of Way Site Menu, select **Actions** > **Set Plot Scale of File**. Set the *Plot Scale* to **1" = 40'** as shown below.



4. From the Right of Way FDOT Menu, select **Actions** > **Label Sheets (**Sheet Navigator**)**. The Sheet Navigator dialog will display as shown.

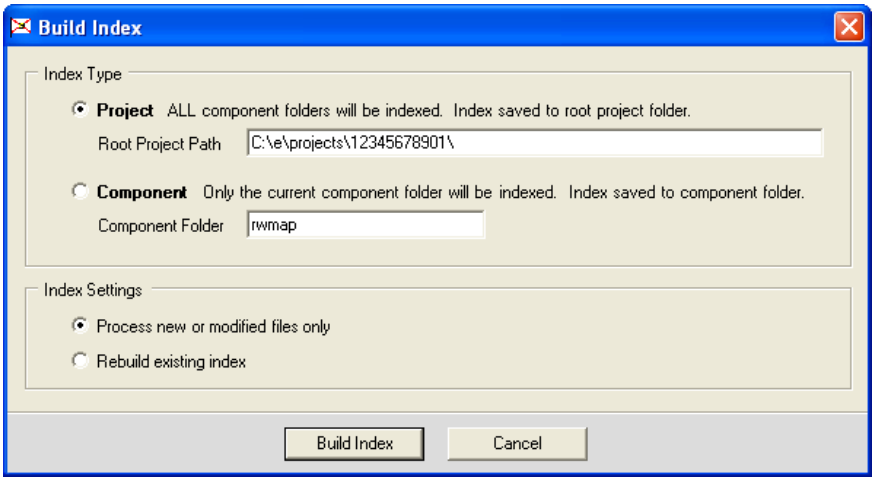


5. From Sheet Navigator menu, select **File** > **New**.

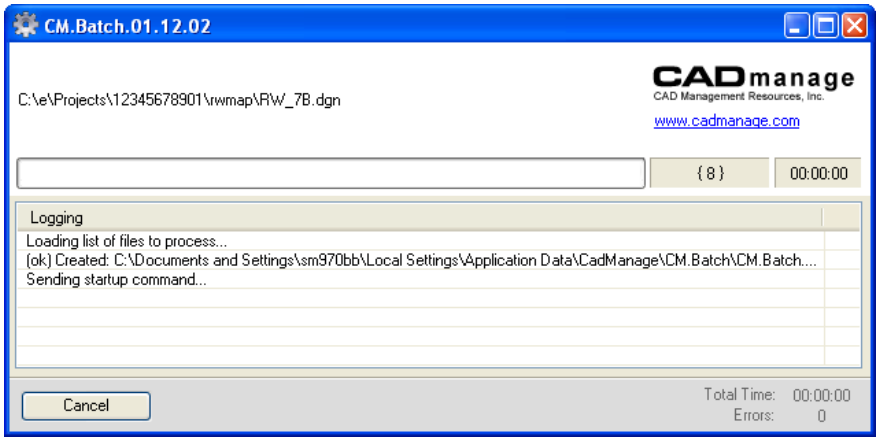


 © 2015 FDOT

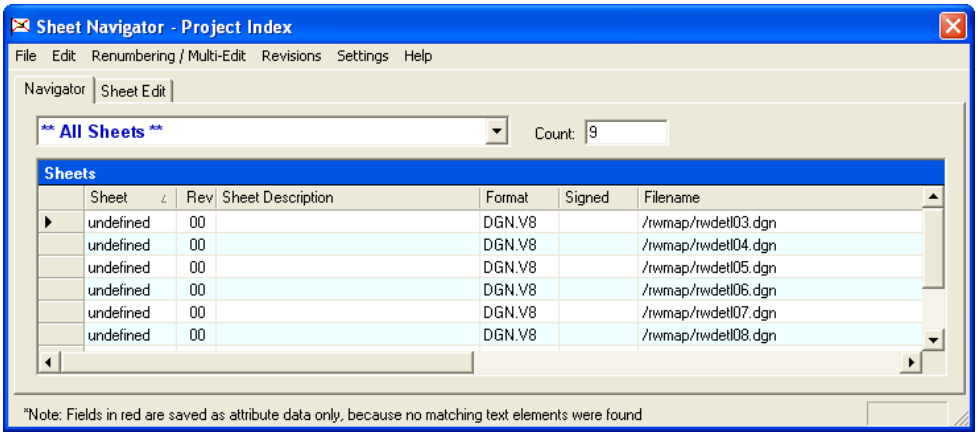
6. The **Build Index** dialog displays, which allows the user to create either a Project or Component (Discipline) index. Select the **Project** radio button then click the **Build Index** button to create a new *Project Index*.



7. As the new index (sheetinfo.xml) is being created, the following dialog will display. The process may take a minute or so to complete.

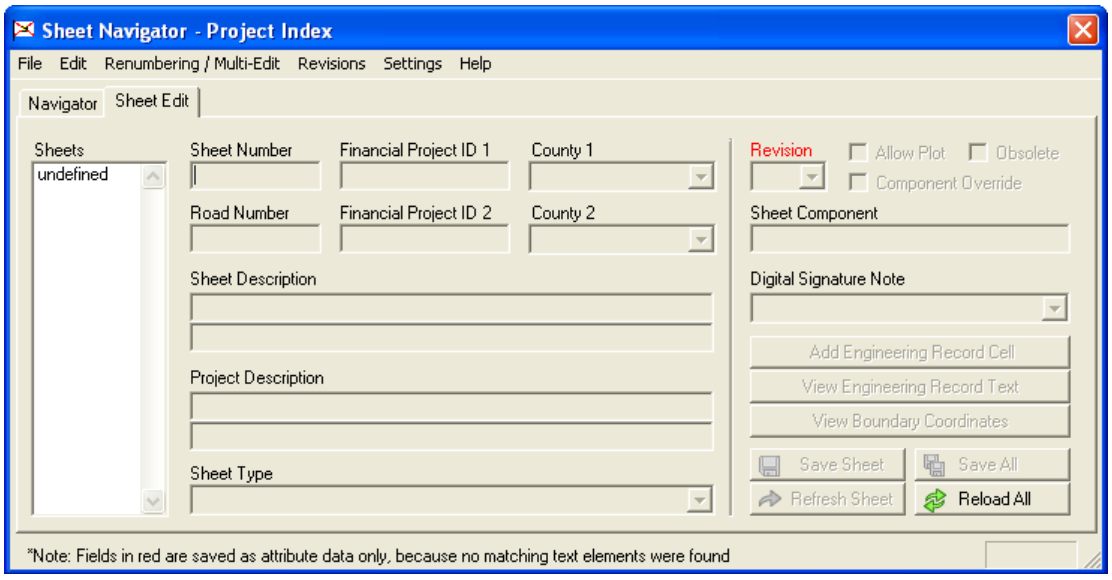


8. Once complete, the Sheet Navigator dialog will reopen and display the contents of the newly created *Sheet Index* file.



 © 2015 FDOT

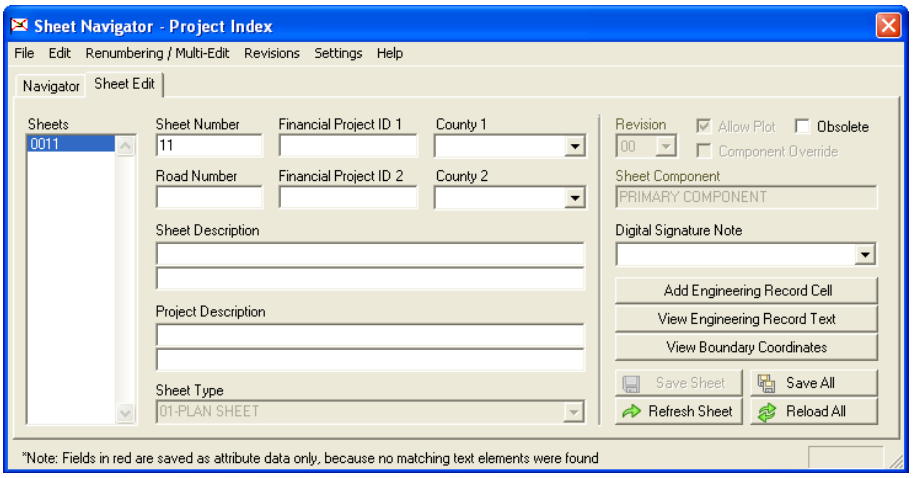
9. Double-click on the first line that represents the *rwdetl03.dgn* file. MicroStation will open the *rwdetl03.dgn file*. MicroStation will open to the DGN file containing the sheet border. Select on the *Sheet Edit* tab and then click on "**undefined**" on the left-hand side. This will allow the user to enter the *Sheet Number*. The other fields will be entered in a later step.



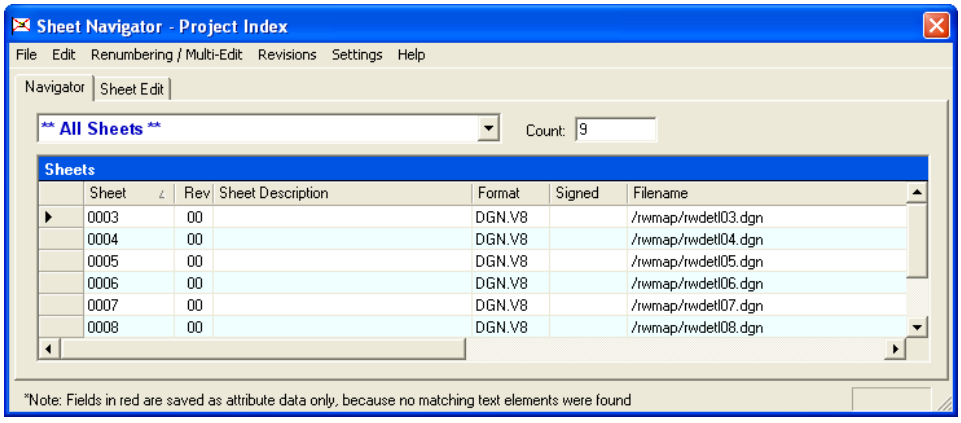
10. Enter "**03**" for the *Sheet Number* and then click **Save Sheet**. This will add the *Sheet Number* to the *rwdetl03.dgn* sheet border.

 © 2015 FDOT

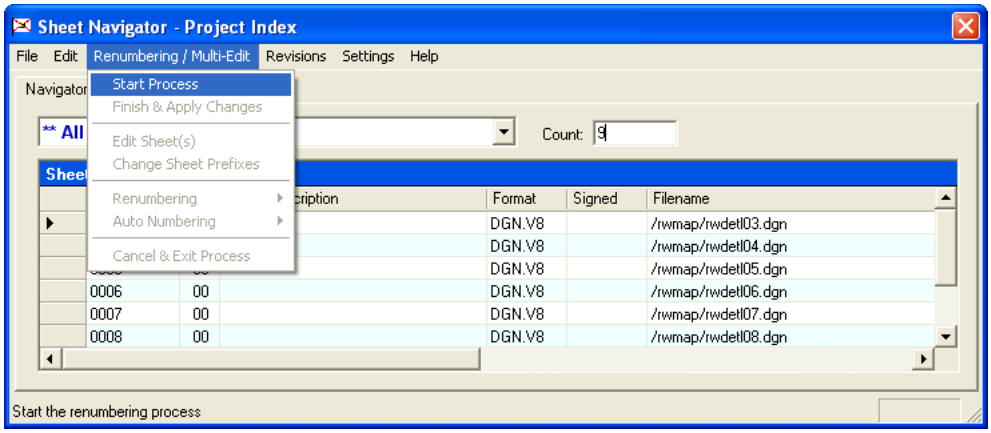
11. Repeat Steps 8-10 for the remaining *rwdetl* files increasing the *Sheet Number* by one each time. The final *Sheet Number* should be **11** as shown below.



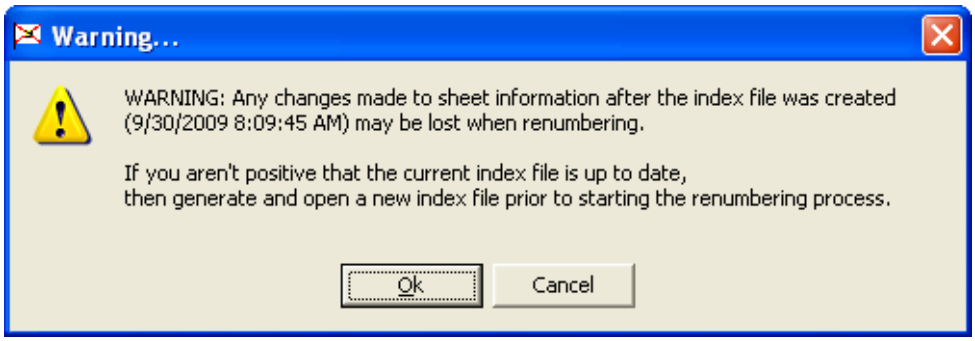
12. From Sheet Navigator menu, select **File > New** and recreate the *Project Index* with the updated information. Ensure that the radio button for **Process new or modified files** only is selected and then click the **Build Index** button to overwrite the existing *Project Index* file.
13. Sheet Navigator will reopen and display the newly updated *Sheet Index* file information.



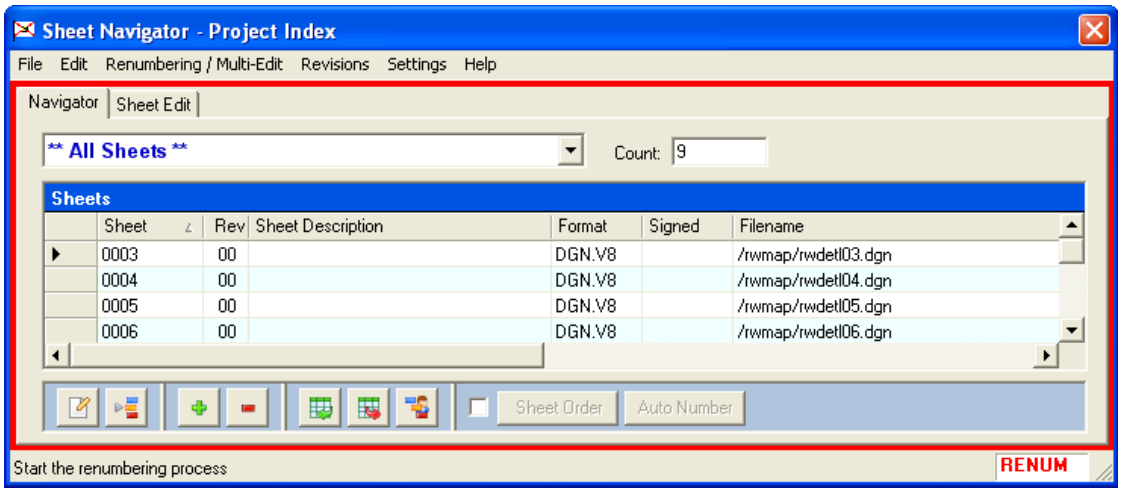
14. From Sheet Navigator menu, select **Renumbering / Multi Edit > Start Process.**



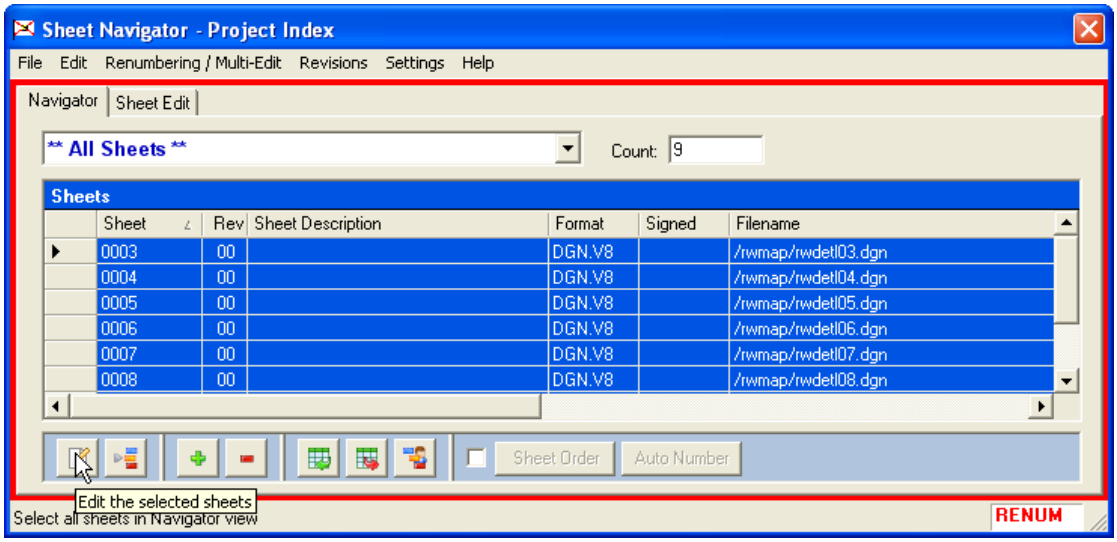
15. Since the *Sheet Index* has just been updated, click **OK** to the Warning that displays.



16. Sheet Navigator displays in **Multi Edit** mode as shown by the red box around the dialog.

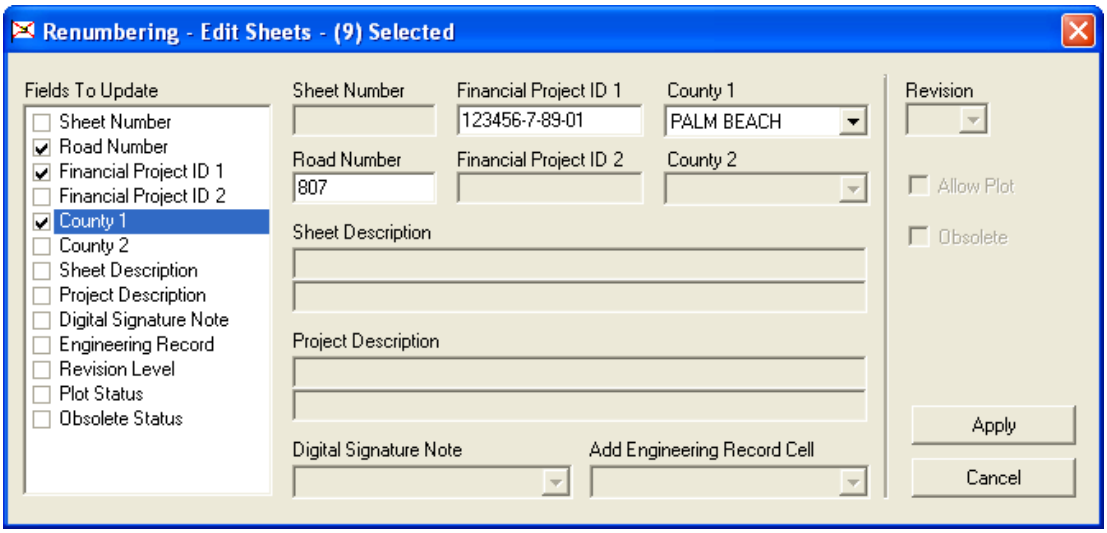


17. Highlight all of the sheets and then click the **Edit the selected sheets** button as shown.

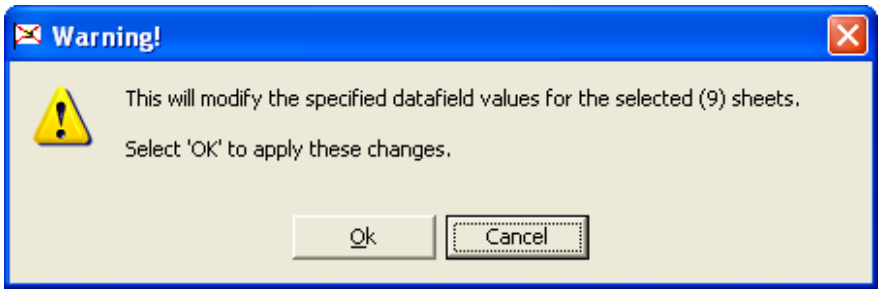


 © 2015 FDOT

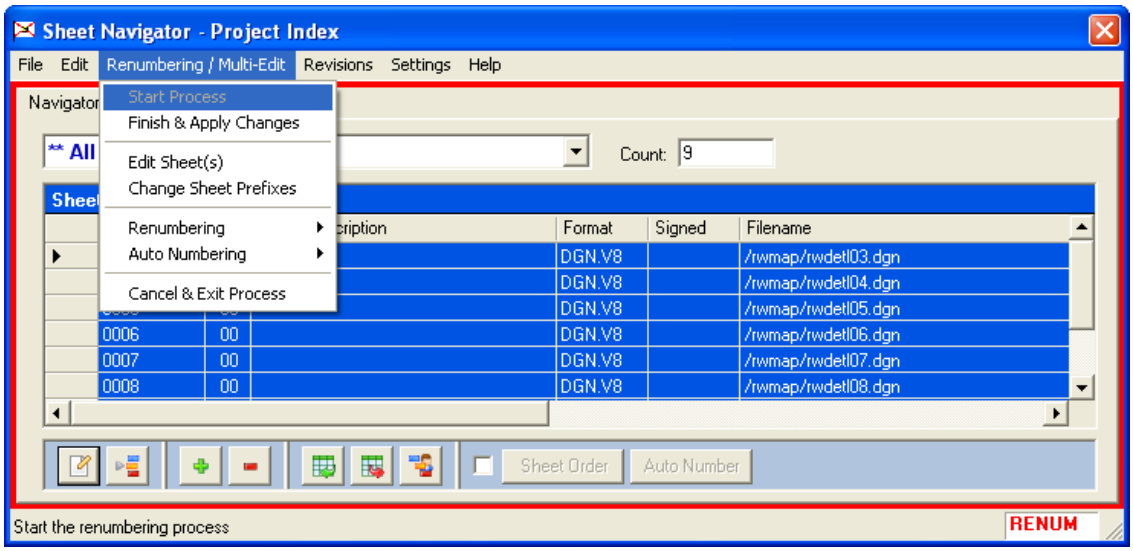
18. Enter the information shown in the following Renumbering – Edit Sheets dialog and then click **Apply**.



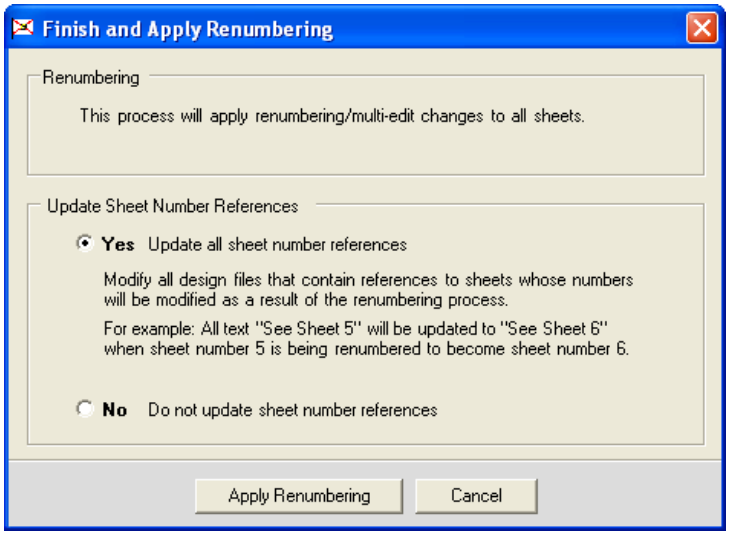
19. Click **Apply** to the Warning that displays to update the sheet information for the 9 sheets.



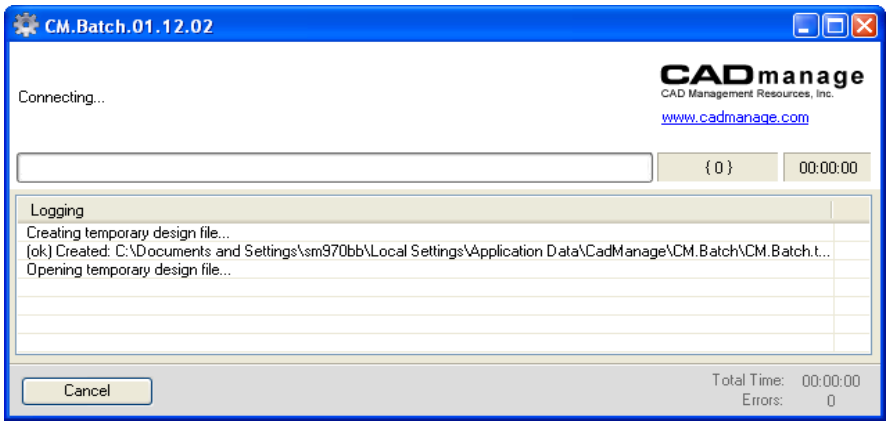
20. From Sheet Navigator menu, select **Renumbering/Multi-Edit > Finish & Apply Changes**.



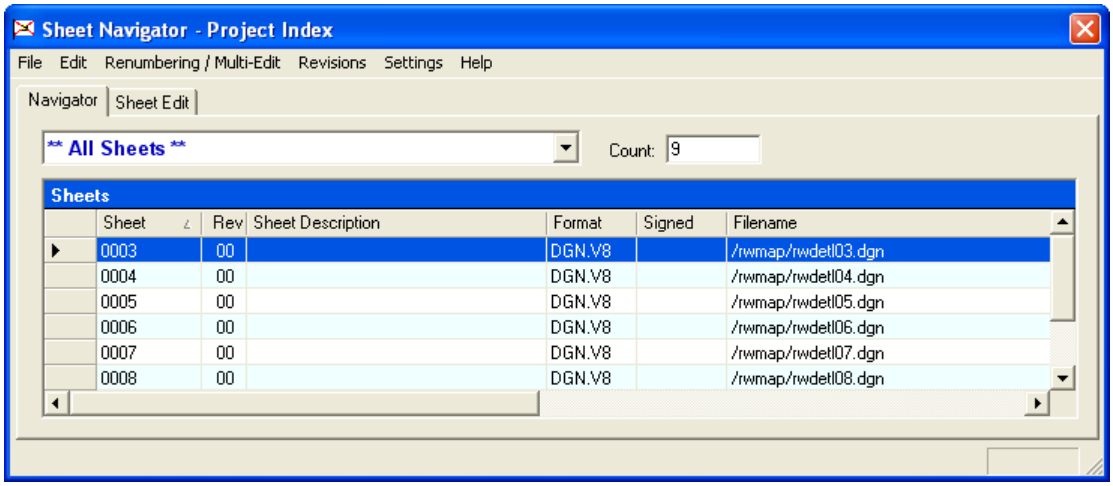
21. From Finish and Apply Renumbering dialog, click **Apply Renumbering** to finalize the changes.



22. The following dialog will display while the sheets are updated.

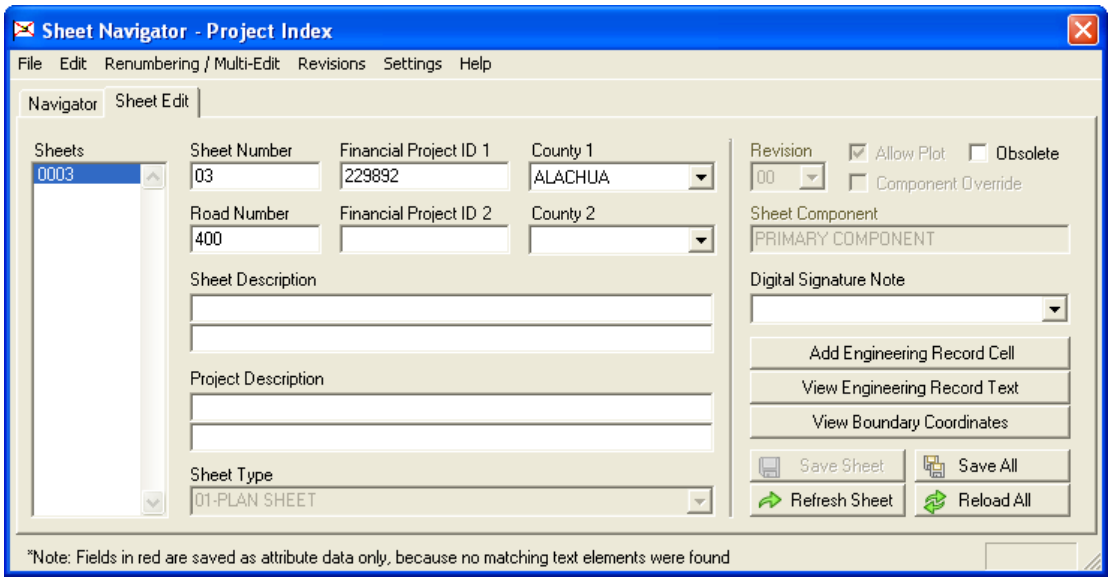


23. Sheet Navigator will reopen when the process is finished.



 © 2015 FDOT

24. Select the *Sheet Edit* tab to verify that the changes were made to the sheets.



25. Close the Sheet Navigator and Exit MiroStation.

15 RIGHT OF WAY MAP SHEETS

OBJECTIVES

This chapter will review the RW Map Sheets pull-down from the Right of Way FDOT Menu:

- Right of Way Sheets from TabList
- Right of Way Sheets from FDOT Menu
- Right of Way Sheet Cells
- Right of Way Cover Sheet with Map

INTRODUCTION

There are three options in FDOT Menu that allow the Right-of-Way Mapper to easily place Right-of-Way sheet cells in a MicroStation design file.

The first option, as discussed in Chapter 7, is accessed from the **Show Command List** button which opens the R/W Mapping *TabLists*. From the R/W Mapping TabLists, the user can select the **RW-Sheets-Cells** tab to access all of the R/W Mapping sheet cells with the exception of the *RW Cover Sheet With Map (DGN)*.

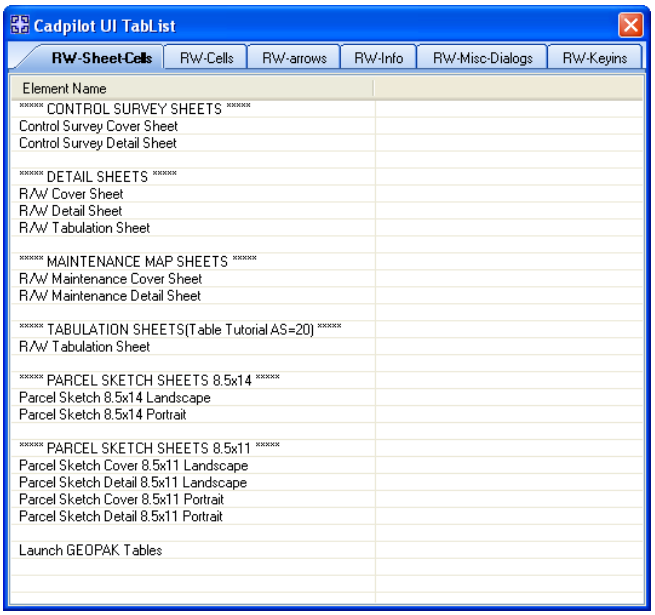
The second option, as discussed further in this chapter, is the FDOT Menu option: **Right of Way > RW Hot Lists**, which also opens the R/W Mapping *TabLists*. From the R/W Mapping TabLists, the user can select the **RW-Sheets-Cells** tab to access all of the R/W Mapping sheet cells with the exception of the *RW Cover Sheet With Map (DGN)*.

The third option is the FDOT Menu option: **Right of Way > RW Map Sheets,** which contains links to all of the R/W Mapping sheet cells, including the *RW Cover Sheet With Map (DGN).*

This chapter will review the R/W Mapping sheet cells available from FDOT Menu and will outline the steps to create a *RW Cover Sheet With Map (DGN).*

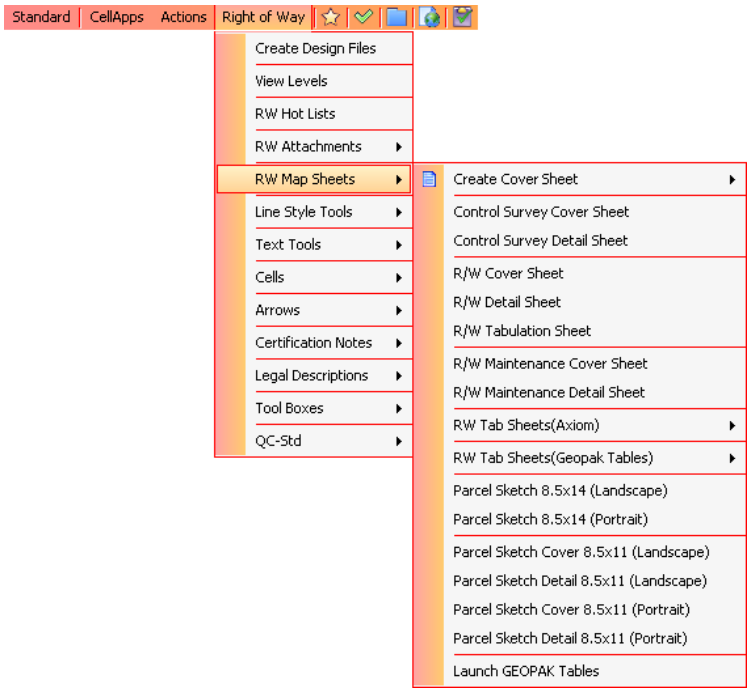
RW MAP SHEETS FROM TABLISTS

The second option to access R/W Mapping sheet cells is the FDOT Menu option: **Right of Way > RW Hot Lists**, which also opens the R/W Mapping *TabLists*. The R/W Mapping TabList dialog provides the user with quick access to many of the categories and items located on the FDOT Menu pull downs.

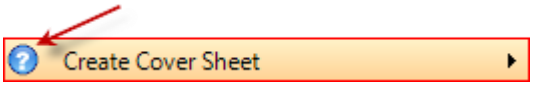


RW MAP SHEETS FROM FDOT MENU

The third option is the FDOT Menu option: **Right of Way > RW Map Sheets,** which contains links to all of the R/W Mapping sheet cells, including the *RW Cover Sheet With Map (DGN).* This option places various R/W Mapping sheet cells of the user's choice in the active design file. The user simply selects the type of sheet cell, and places it in the file. When the R/W Tabulation Sheets (Geopak Tables) is selected, the tabulation sheet will be placed in the design file at the scale of 1"=20'. This accommodates the use of Geopak Table Tutorial text placement. When selected, the Launch Geopak Tables provides a short cut to launch the Geopak Table Tutorial dialog.

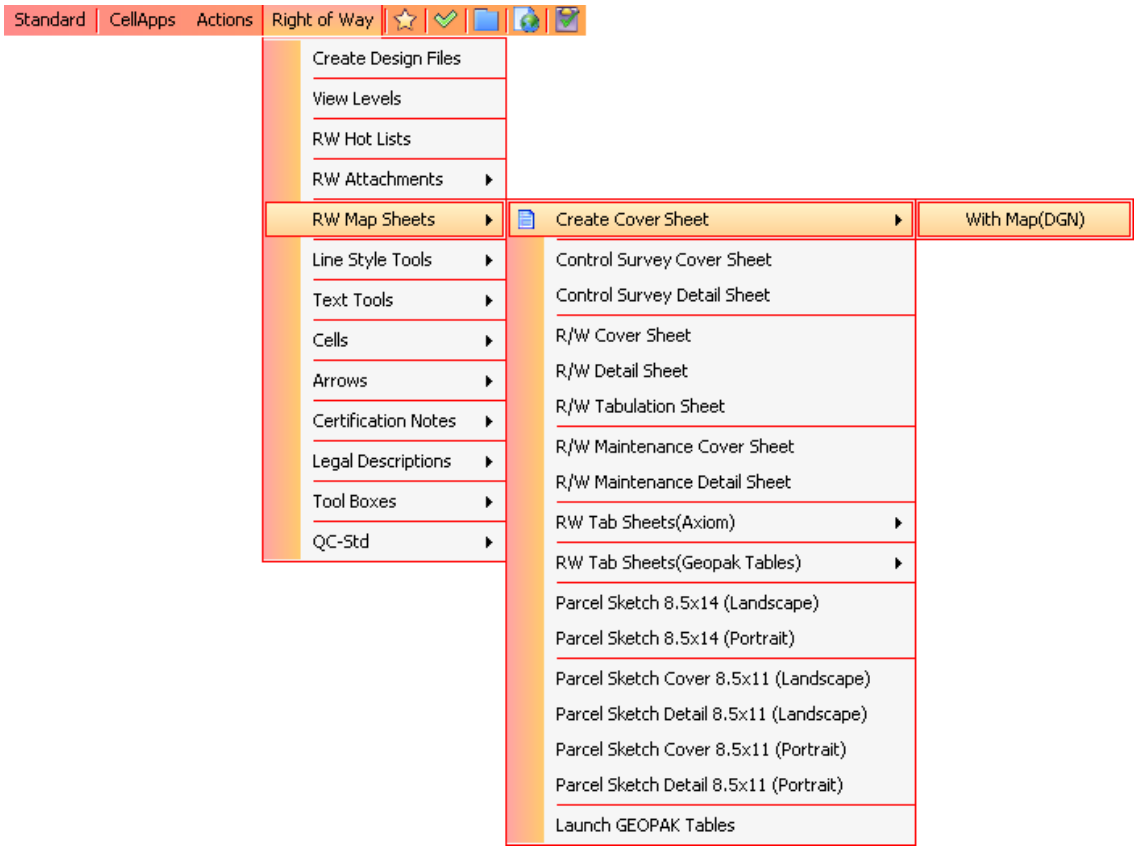


Note A **Help** button is located to the left of the category name containing help information on that menu selection.



The primary difference between choosing RW Map Sheets from the FDOT Menu pull-down and the Hot Lists Hot Box is that the FDOT Menu pull-down contains the option to create a **RW Cover Sheet With Map (DGN)**.

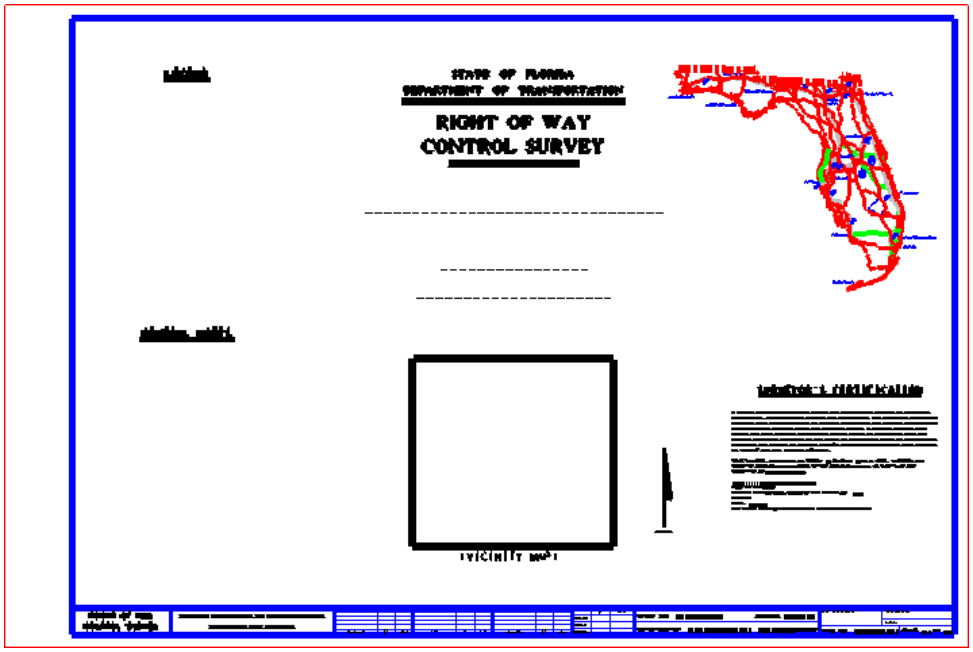
 © 2015 FDOT


Standard
CellApps
Actions
Right of Way
Create Design Files
View Levels
RW Hot Lists
RW Attachments
RW Map Sheets
Line Style Tools
Text Tools
Cells
Arrows
Certification Notes
Legal Descriptions
Tool Boxes
QC-Std
Create Cover Sheet
With Map(DGN)
Control Survey Cover Sheet
Control Survey Detail Sheet
R/W Cover Sheet
R/W Detail Sheet
R/W Tabulation Sheet
R/W Maintenance Cover Sheet
R/W Maintenance Detail Sheet
RW Tab Sheets(Axiom)
RW Tab Sheets(Geopak Tables)
Parcel Sketch 8.5x14 (Landscape)
Parcel Sketch 8.5x14 (Portrait)
Parcel Sketch Cover 8.5x11 (Landscape)
Parcel Sketch Detail 8.5x11 (Landscape)
Parcel Sketch Cover 8.5x11 (Portrait)
Parcel Sketch Detail 8.5x11 (Portrait)
Launch GEOPAK Tables

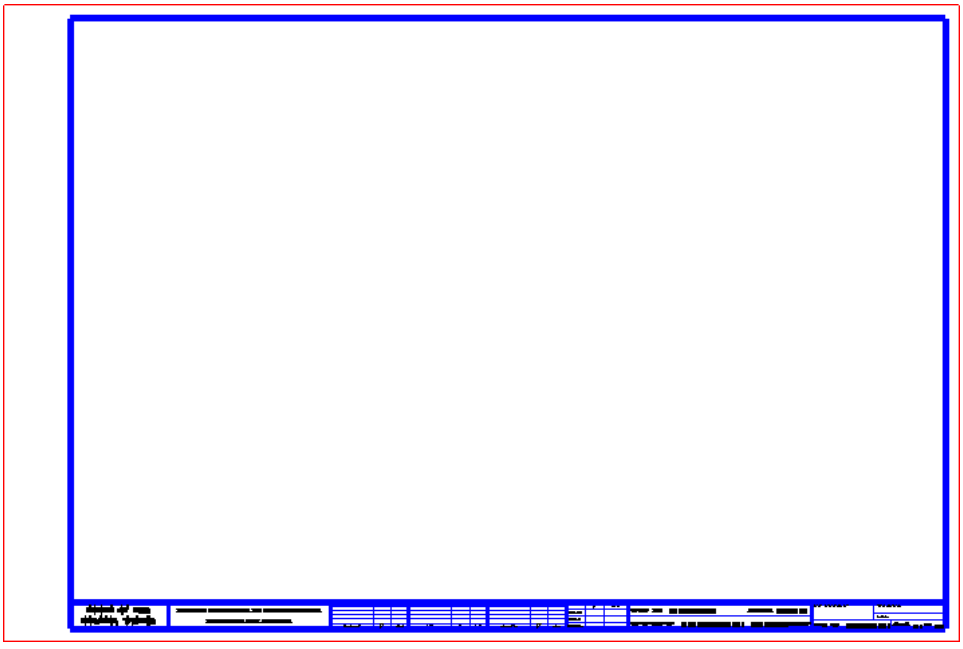
 © 2015 FDOT

RW SHEET CELLS

- **CSCOVR -** Places a Right of Way Control Survey Cover Sheet cell at the current Plot Scale of the open DGN file. The legend, general notes, location map and certifications are placed on this sheet.

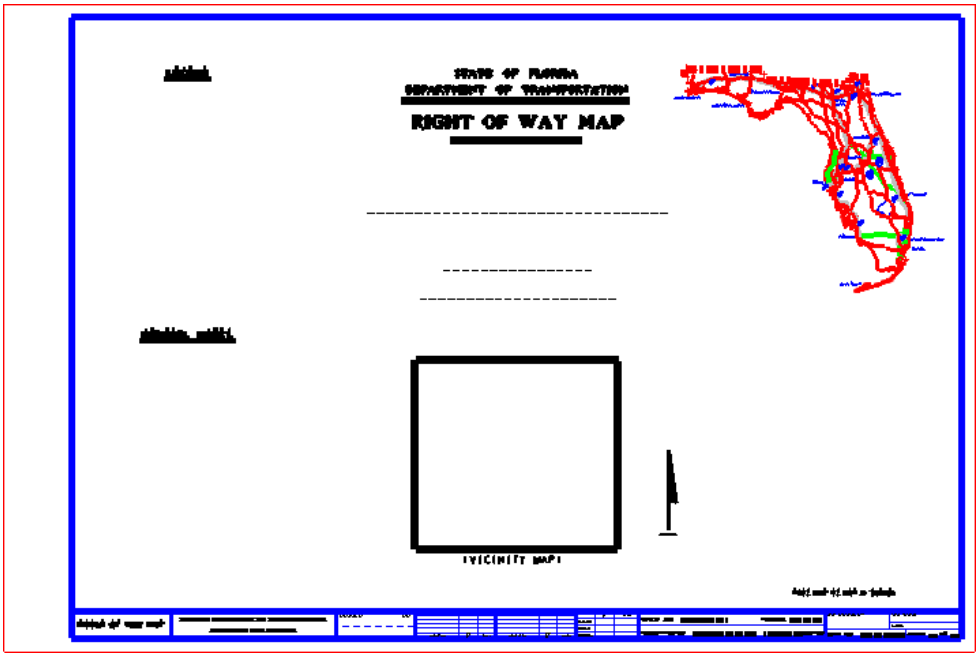


- **CSDETL -** Places a Right of Way Control Survey Detail Sheet cell at the current Plot Scale of the open DGN file. This sheet(s) is derived from the Master CADD file at an appropriate scale to depict the field right of way survey data. The line work, text, etc are added / modified to fit the detail sheet scale. The District Right-of-Way Surveyor (DRS) determines if detail sheets are to be prepared for the entire project or if only recorded subdivisions are to be shown on the detail sheets. All subdivision block lines are tied by station and offset to the survey line. The DRS determines the method of ties, whether by 90 degree offsets or by straight-line extension.

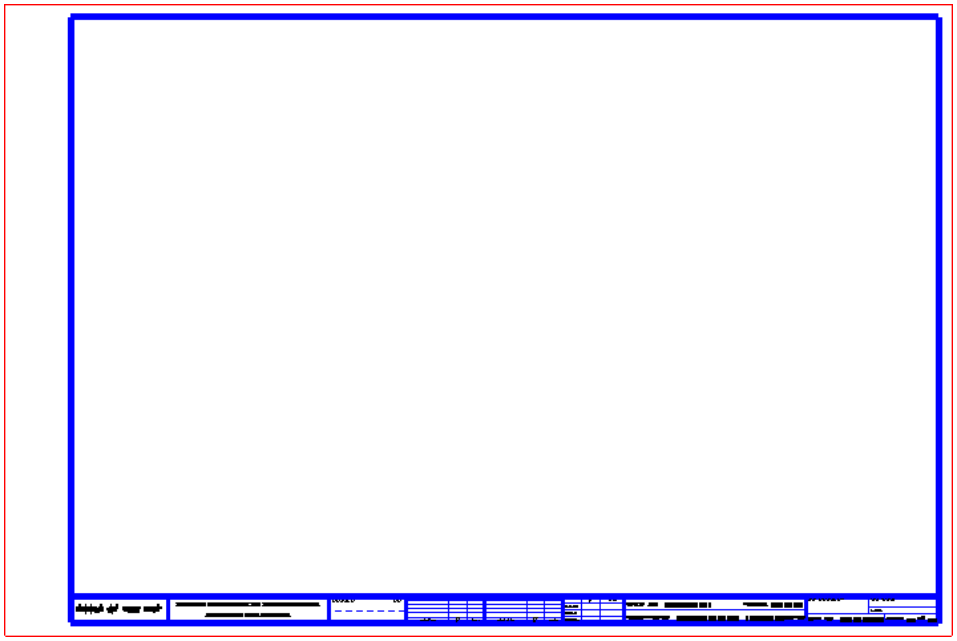


 © 2015 FDOT

- **RWCOVR -** Places a Right of Way Cover Sheet cell at the current Plot Scale of the open DGN file. The legend, references, general notes, and location map are placed on this sheet. On projects that do not require a cover sheet, the foregoing information may be shown on the key or detail sheet(s) as directed by the DRS.

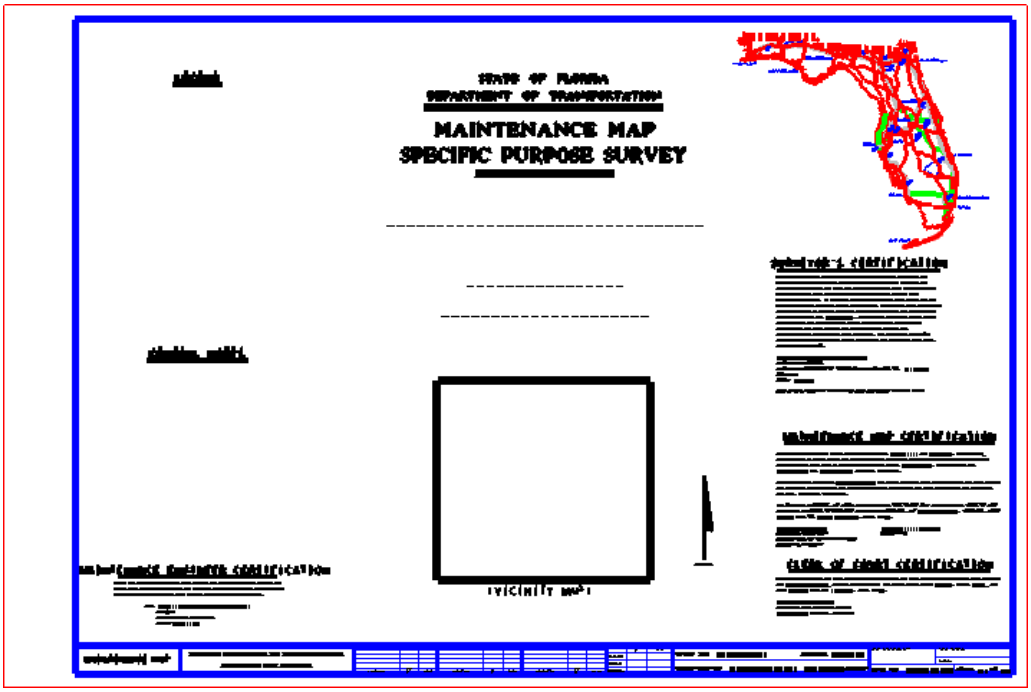


- **RWDETL -** Places a Right of Way Detail Sheet cell at the current Plot Scale of the open DGN file. This sheet(s) is derived from the Master CADD file at an appropriate scale. The line work, text, etc are added / modified to fit the detail sheet scale. These Detail Sheets may also be copied from the existing Detail Sheets from the Control Survey Maps. Detail Sheets include parcel numbering by use of bubbles, complete geometry for all takes and geometry for remainders as directed by the DRS, topography, limits of construction, if required and jurisdictional or agency lines, if required. The note "THIS MAP IS NOT A SURVEY" is shown above the title block.



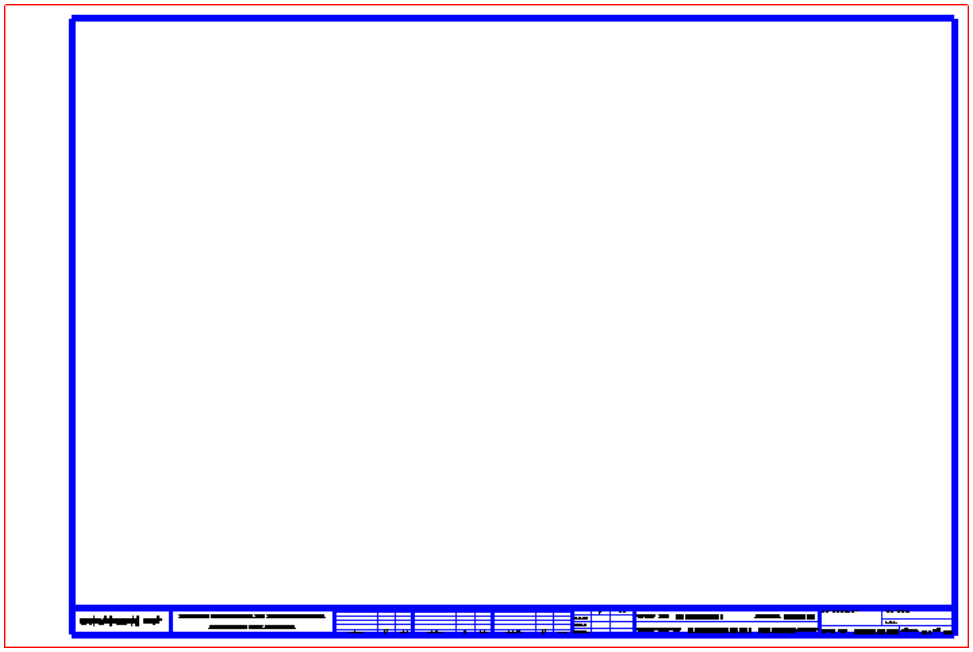
- **RWTAB** - Places a Right of Way Table of Ownerships (TAB) Sheet cell at the Scale of **1" = 20'** into the open DGN file. Required data includes parcel number, sheet numbers on which the parcel displays (all), name of property owner(s), the area in square feet or acres of the part to be acquired and the remainder (when there is no remainder show 0), any necessary comments, and the recording data of the executed or condemned parcel when completed.

- **MMCOVR** - Places a Right of Way Maintenance Map Cover Sheet cell at the current Plot Scale of the open DGN file. The legend, general notes, location map and certifications are placed on this sheet. On projects that do not require a cover sheet, the foregoing information may be shown on the key or detail sheet(s) as directed by the DRS.

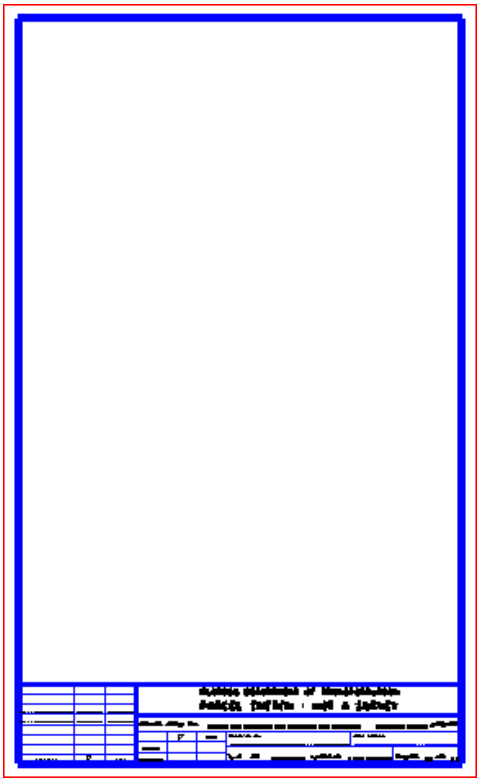


 © 2015 FDOT

- **MMDETL** - Places a Right of Way Maintenance Map Detail Sheet cell at the current Plot Scale of the open DGN file. This sheet(s) is derived from the Master CADD file at an appropriate scale. The line work, text, etc are added / modified to fit the detail sheet scale. These Detail Sheets may also be copied from the existing Detail Sheets from the Control Survey Maps. Certified field notes support all maintained right of way along the mainline corridor. At the direction of the DRS, reference to the appropriate field books is made either in the general notes on the Cover Sheet or by reference on the Detail Sheet. Station and offsets are shown at each change in direction of the right of way.

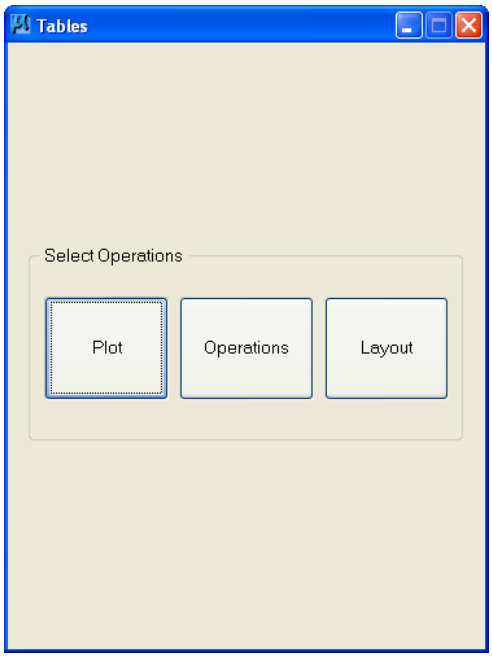


- **RWPS** - Places a Right of Way Parcel Sketch 8.5x14 Portrait Sheet cell at the current Plot Scale of the open DGN file. Parcel Sketches may be prepared for various purposes at the direction of the DRS. Purpose, format, scale, etc. are designated in the project scope of services as required.

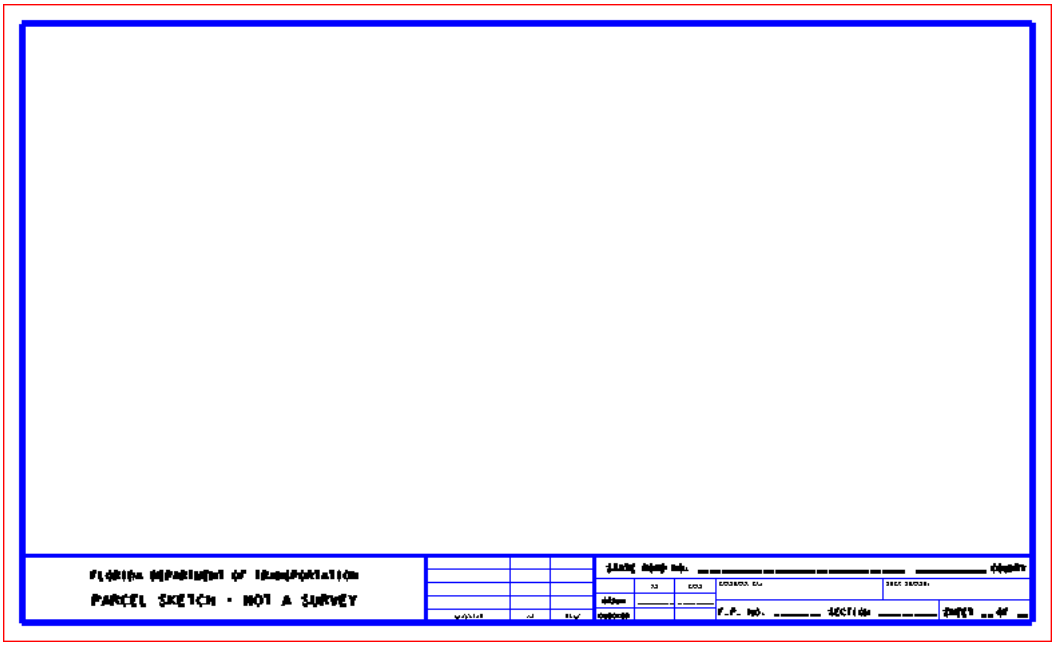


© 2015 FDOT

- **TABLES** - Launches the GEOPAK tables dialog shown below.



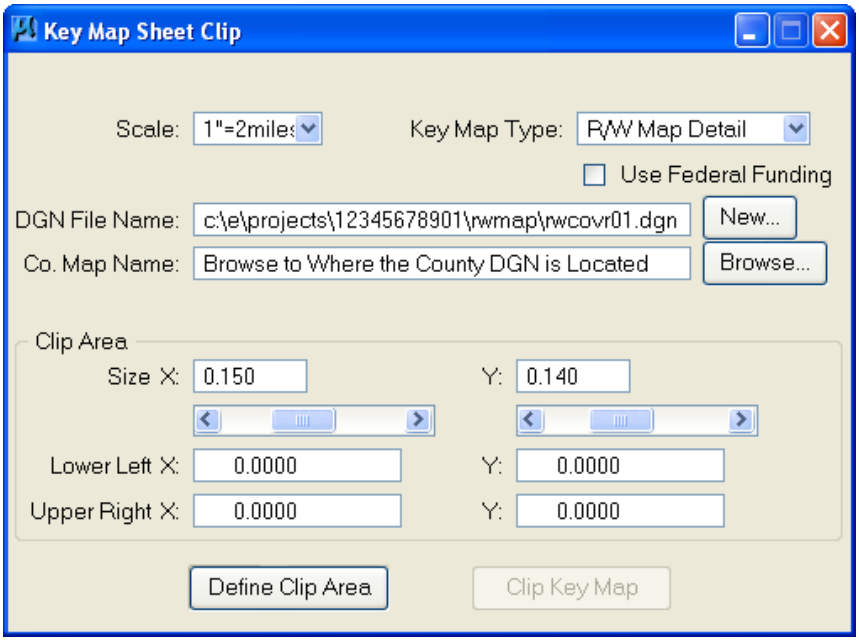
- **RWPS** - Places a Right of Way Parcel Sketch 8.5x14 Landscape Sheet cell at the current Plot Scale of the open DGN file. Parcel Sketches are optional and are prepared for various purposes at the direction of the DRS. Purpose, format, scale, etc. are designated in the project scope of services as required.



 © 2015 FDOT

RW COVER SHEET WITH MAP (DGN)

This option automates the creation of the various right of way map cover sheets for “Control Survey”, “Right of Way Map”, and “Maintenance Map”.



- **Scale** This toggle button selects the size of the project location map. **Scale** has three options:

  1”= 2miles

  1”=4miles

  1”=8miles

- **Key Map Type** Gives the user a choice of four different R/W Cover Map Sheet Types for Right of Way Mapping:
  - *R/W Cntl Survey* Right of Way Control Survey Cover Sheet
  - *R/W Map Detail* Right of Way Map Cover Sheet
  - *R/W Maintenance* Right of Way Maintenance Map Cover Sheet
  - *R/W Fed. Aid* Federal Aid Cover Sheet (no longer used)
- **Use Federal Funding** Leave this option unchecked as it is no longer used.
- **DGN File Name** The name of the design file that the Cover Sheet is drawn in. The Cover Sheet will be placed at the center of the Design Plane. The DGN file will have the proper naming convention (rwcovr01.dgn). Unlike 'Create File' this option will not increment the file name (rwcovr01, 02, 03). The New button when selected displays the file location dialog for selecting a new/different design file name or location.
  - *New…* The **New** button when selected displays the file location dialog for selecting a new/different design file name or location.
- **Co. Map Name** The name of the County Map from which the area will be taken. The Map can be local on the workstation or remote via a NFS mount on the Server. Maps can be downloaded from:

  http://www.dot.state.fl.us/surveyingandmapping/countymap.shtm.

 © 2015 FDOT

- *Browse…* The **Browse** button when selected displays the file location dialog for selecting a new/different county map design file name or location.

- **Clip Area**
  - **Size X and Clip Area Size Y** This value is used to adjust the size of the clip area (within limits). The default size of the Clip Area for the English setting is 0.16 feet on each side (at 1:1 scale). The values can be adjusted up or down, within limits, independently in the X and Y directions. The slider bar below each value will adjust the values or the values can be keyed in. **The Clip Area is lower left justified.**
  - **Lower Left X: Y: and Upper Right X: Y:** This entry defines the clipping coordinates. The coordinates are generally for information only, since the coordinates are normally set with the **Define Clip Area** button. If the user knows the clipping coordinates, they can be manually entered into these fields.

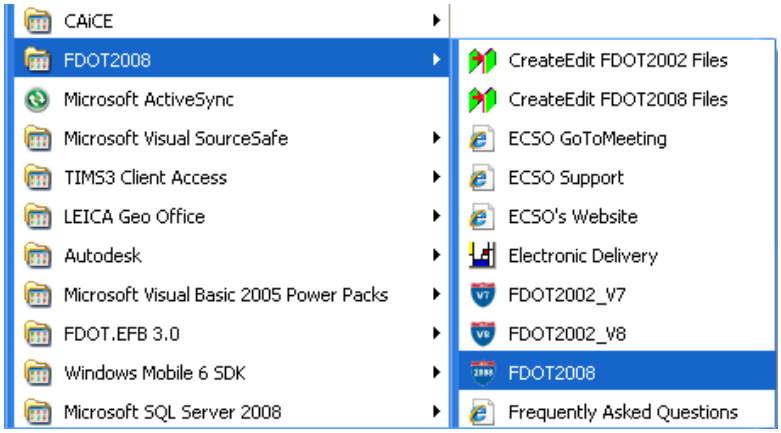
- **Define Clip Area** This button opens the County Map file to place the Clip Border. A rectangle that represents the clipping area will be attached to the cursor. The rectangle defines the area that will be clipped out and moved to the Cover Sheet. The placement of the rectangle can be manipulated by MicroStation commands to position the project location map as desired. Select the area to clip with a data point. The lower left and upper right coordinates will be displayed in the coordinate fields of the dialog box (Lower Left X: Y:, Upper Right X: Y:).

- **Clip Key Map** This button will attach the County Map File as a reference file or in the master file depending on the user's selection and clip the area designated as the project location map into the Output Design File. The Clipped Area will be scaled accordingly English or Metric Units. During processing, if the Cells needed to create the cover sheet cannot be located (no library or wrong library attached), then the application will pop up a message informing the user of this problem and prompt the user to select OK to attach the correct Cell Library or CANCEL to Stop Processing. If OK is selected, the Cell Library Open dialog will display. If the MX_LIBDIR variable is set to the correct location (Metric or English), then the user will be presented with a list of cell libraries to attach. If it is not set, then the user must navigate to the correct location of the cell library. When the drawing is complete, the application will do a FIT command and SAVE the DESIGN.

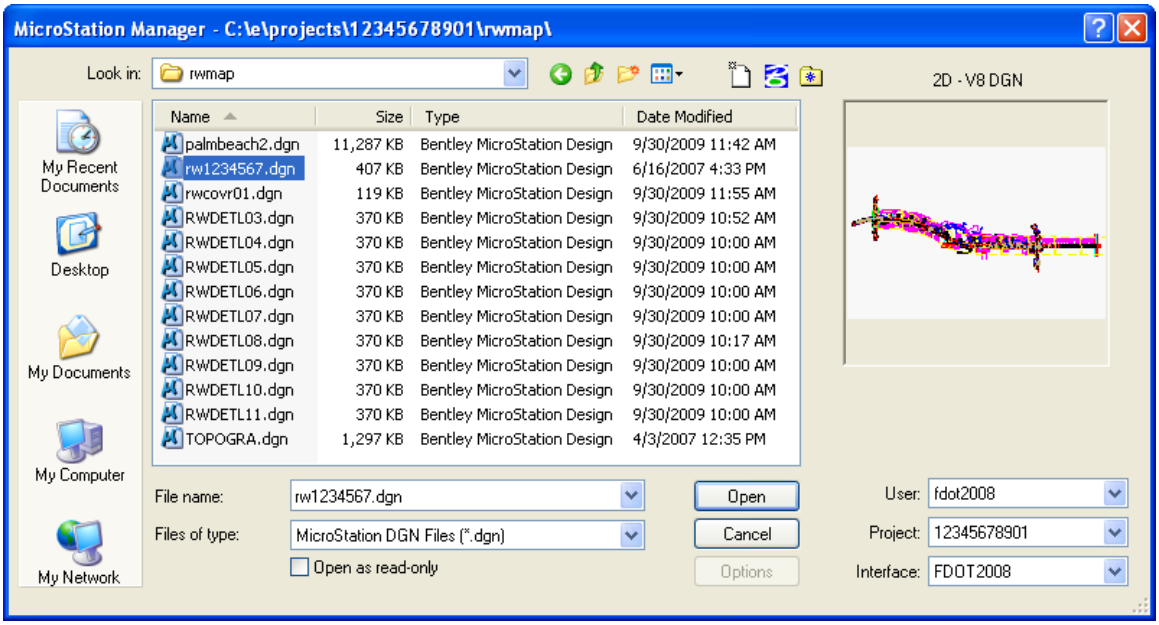
Exercise 15.1 Create RW Map Cover Sheet With Map (DGN)

➢ ***In this exercise the user will learn how to create a RW Map Cover Sheet With MAP (DGN).***

1. Open MicroStation using the FDOT2010 XM icon on the Desktop. As an alternative, launch MicroStation from the FDOT2010 folder on the Windows Start menu.

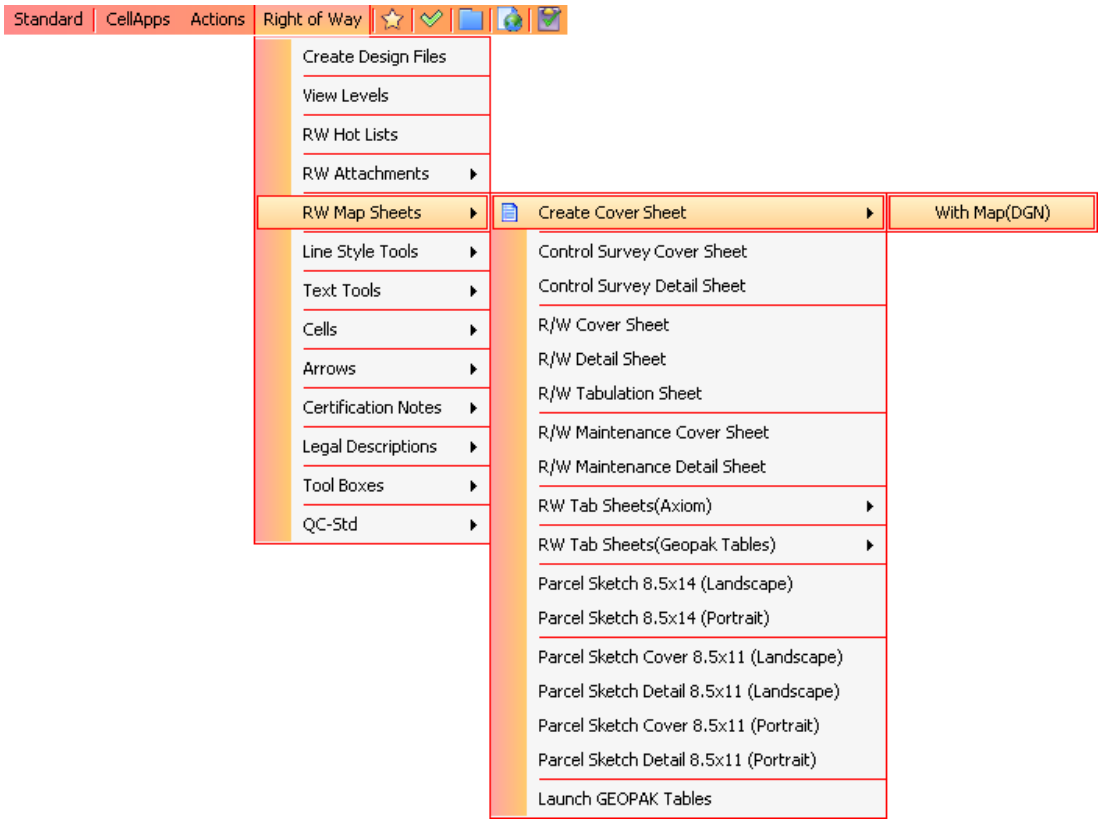


2. From the MicroStation, open the file C:\E\Projects\12345678901\rwmap*rw1234567.dgn*. Ensure that the correct *User*, *Project*, and *Interface* are chosen as shown.

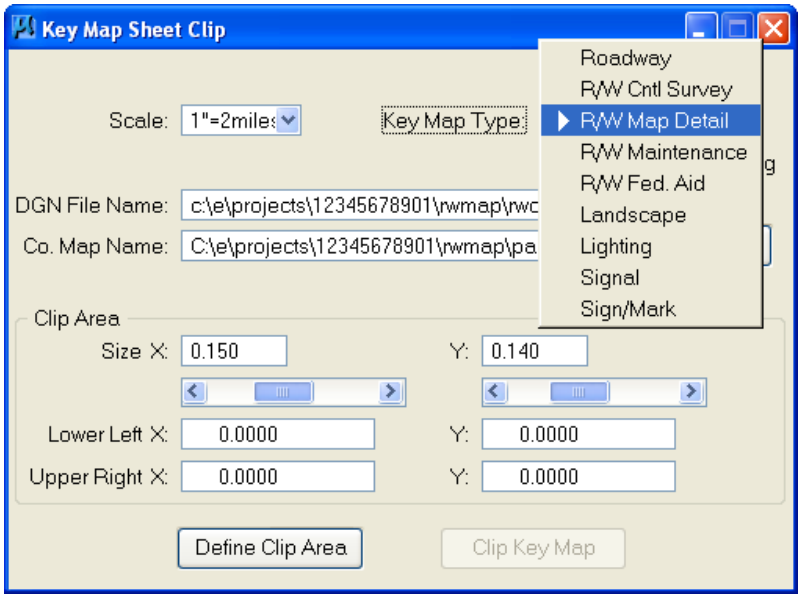


 © 2015 FDOT

3. From FDOT Menu, select **Right of Way > RW Map Sheets > Create Cover Sheet > With Map (DGN)** as shown.

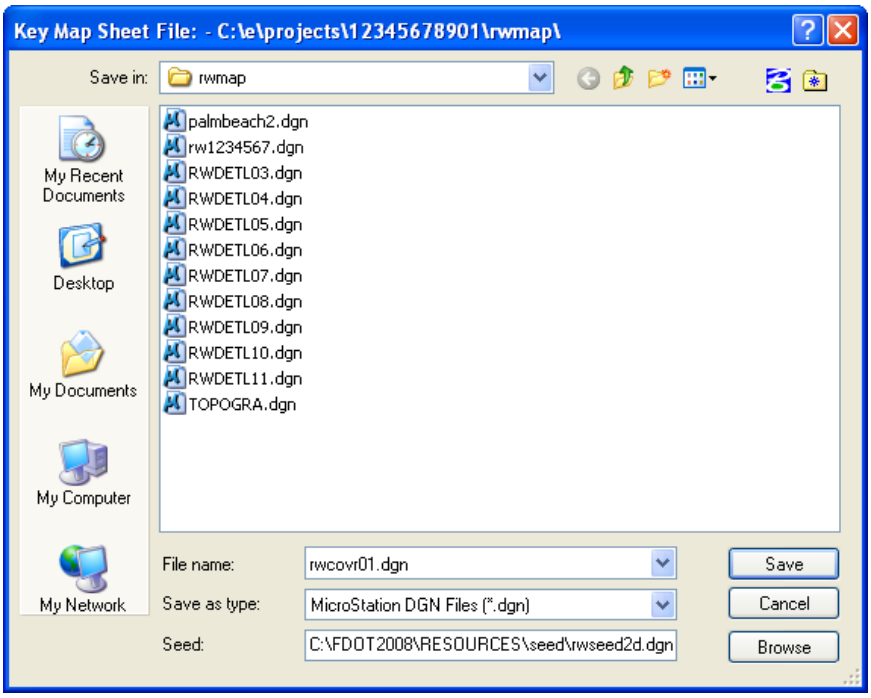


4. The Key Map Sheet Clip dialog displays. Initially, the dialog will be set to create a Roadway key sheet. Click the pull-down next to *Key Map Type* and change the type to **R/W Map Detail**. Make sure that the *Units* are set to **English** and that the *Scale* is set to **1"=2miles**.

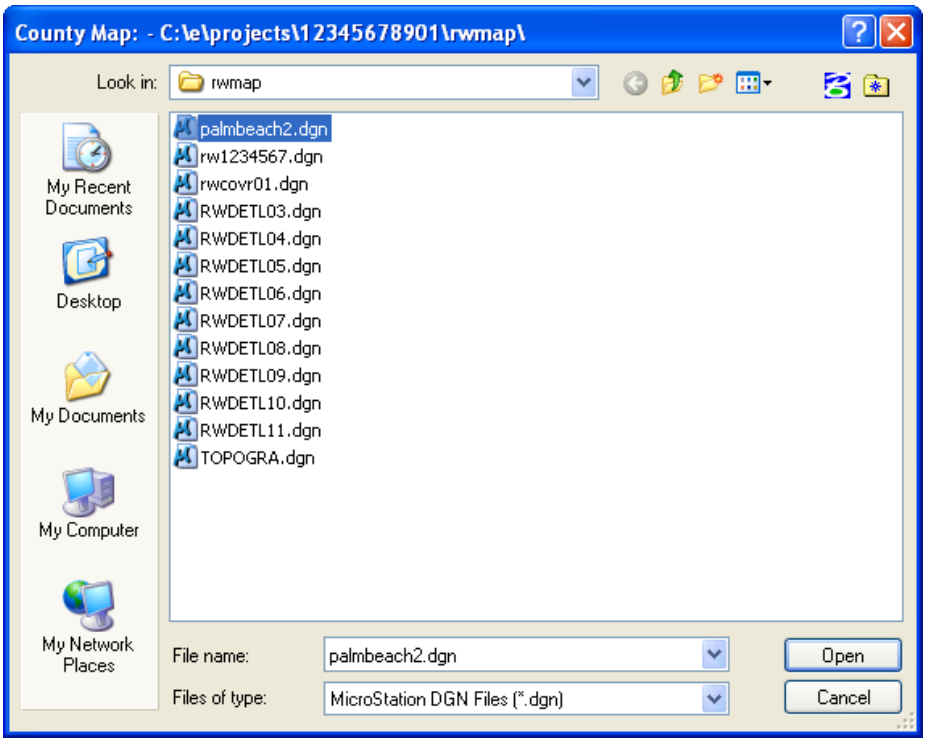


 © 2015 FDOT

5. Click the **New…** button and navigate to the project \12345678901\rwmap directory where the Right-of-Way cover sheet *rwcovr01.dgn* will be saved. Click **Save** to accept the location for the file.

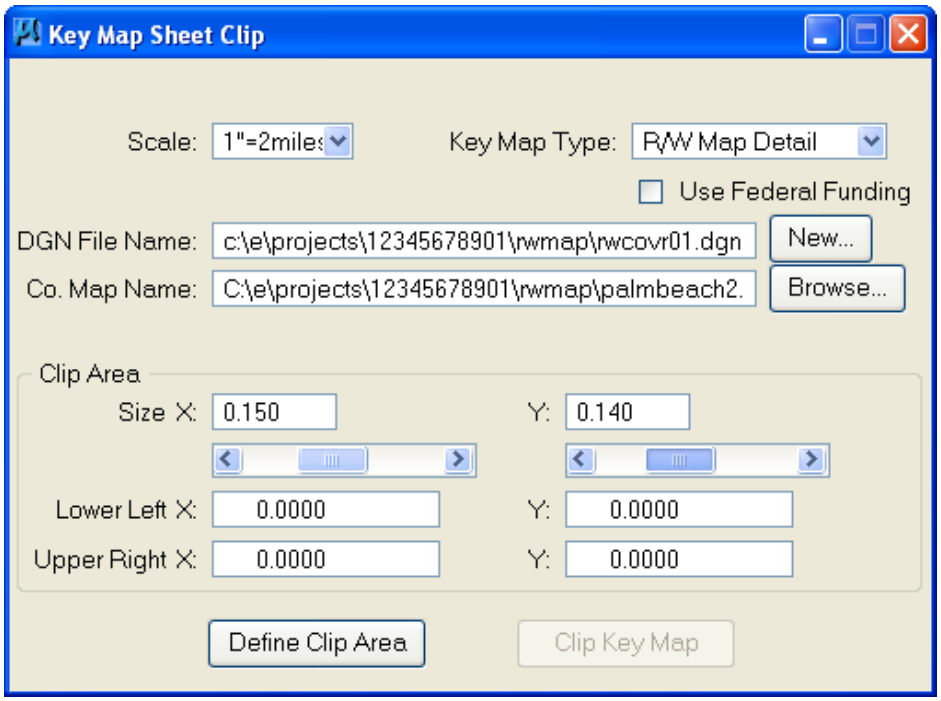


6. Ensure that the *County Map* is in the project directory. Click the **Browse** button and select the **plambeach2.dgn** *County Map*. The location of the project area will be chosen from this file. Click **Open** to accept the **palmbeach2.dgn** *County Map*.

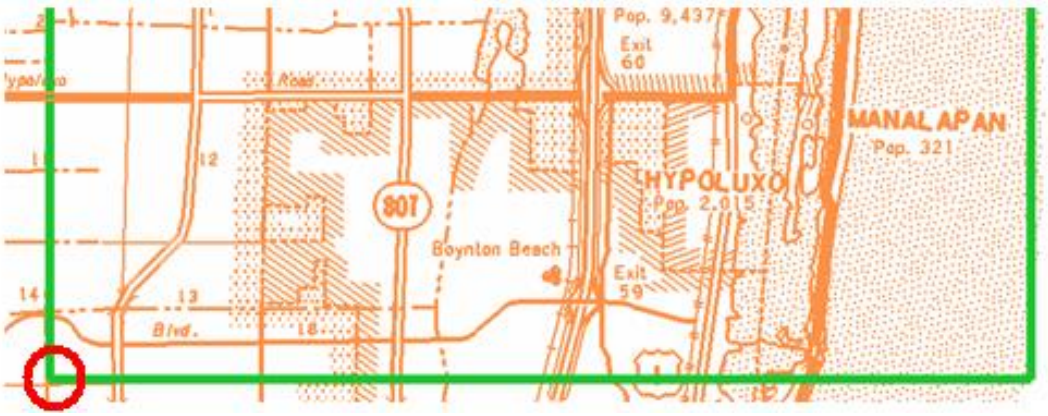


 © 2015 FDOT

7. From the Key Map Sheet Clip dialog, set *Clip Area Size X*: **0.15**, *Y*: **0.14** then click **Define Clip Area**.



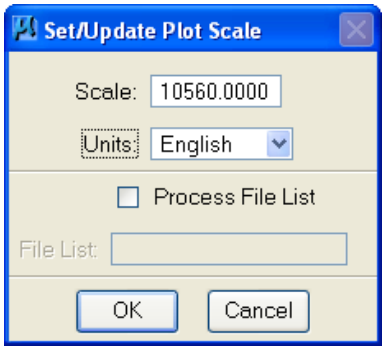
8. After a short wait, the *palmbeach2.dgn* file will be opened with a square 8 miles on a side attached to the cursor. Place the bottom left corner of the square approximately in the location indicated by the circle shown in the screen shot below. Use *zoom* functions and *reset* as needed.



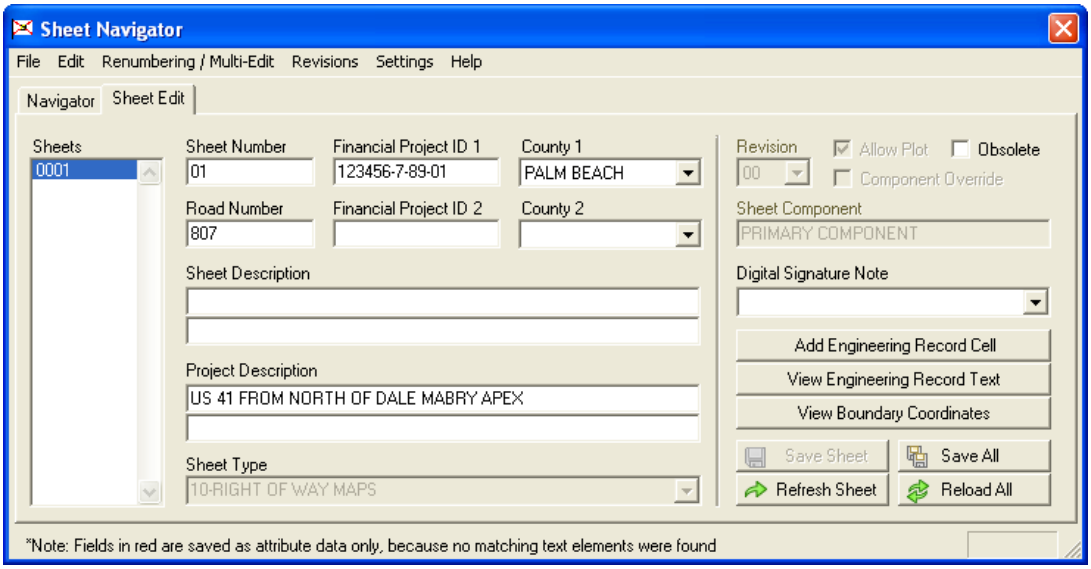
9. Click the **Clip Key Map** button that now becomes available to create the *rwcovr01.dgn* file.

 © 2015 FDOT

10. Before entering the project information in Sheet Navigator, set the *Plot Scale* of the file. From FDOT Menu, select **Actions > Set Plot Scale of File**. Set the *Plot Scale* of the file to **10,560** which is equal to **1" = 2 miles**. Click **OK** to exit the Set/Update Plot Scale dialog.



11. The *rwcovr01.dgn* file opens along with Sheet Navigator. Match the settings shown below in Sheet Navigator and click **Save Sheet**.



12. Close Sheet Navigator.
13. If time allows, follow along with the instructor to copy other key elements from a finished cover sheet DGN.

 © 2015 FDOT

 © 2015 FDOT

16 RIGHT OF WAY CERTIFICATION NOTES, GENERAL NOTES, & LEGEND

OBJECTIVES

This chapter will review the RW Certification Notes from the Right of Way FDOT Menu and will also overview placing RW General Notes and Legend onto a cover sheet using MicroStation's Text Import tool. Items covered will include:

- RW Certification Note Examples
- Text Import Settings
- New Certification Notes
- Edit Certification Notes
- RW General Note
- RW Legend

INTRODUCTION

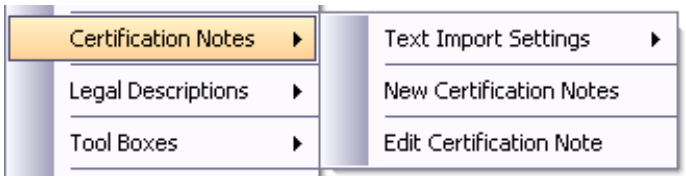
When creating FDOT Right-of-Way maps, it is necessary to place Certification Notes on some of the Right-of-Way map sheets created during the production process. Certification Notes are used to indicate when a Right-of-Way map was recorded, the limits of maintained Right-of-Way, and other uses.

The FDOT ECSO has added macros to the Right of Way FDOT Menu that allow the Right-of-Way Mapper to automate much of the process of adding Certification Notes to maps.

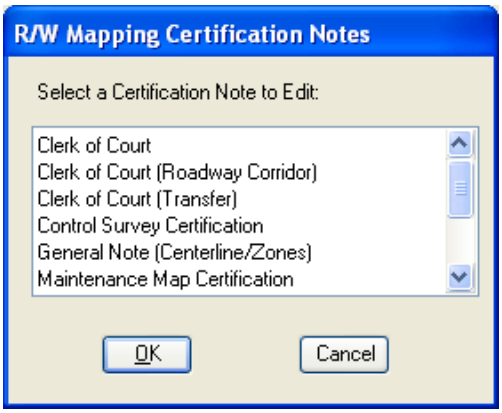
Another necessary item when creating FDOT Right-of-Way map sets is the placement of General Notes and Legend on the cover sheet. Generic templates for General Notes and the Legend are included in the FDOT CADD software delivery.

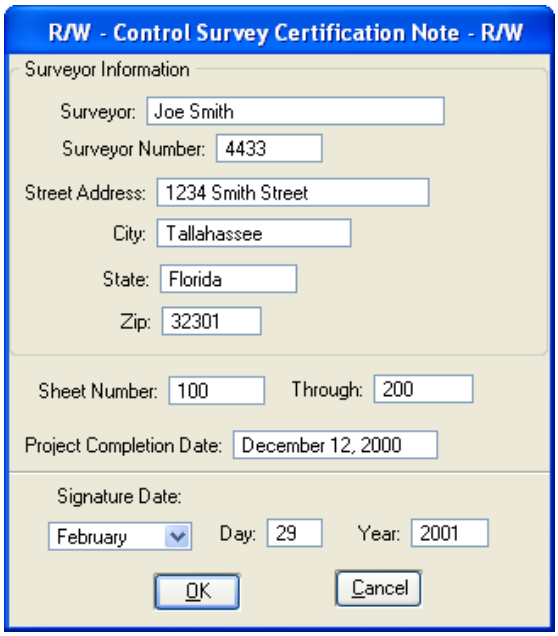
This chapter concentrates on Right of Way FDOT Menu methods for the choice, scaling, and placement of FDOT RW Certification Notes, General Notes, and Legend.

RW CERTIFICATION NOTES



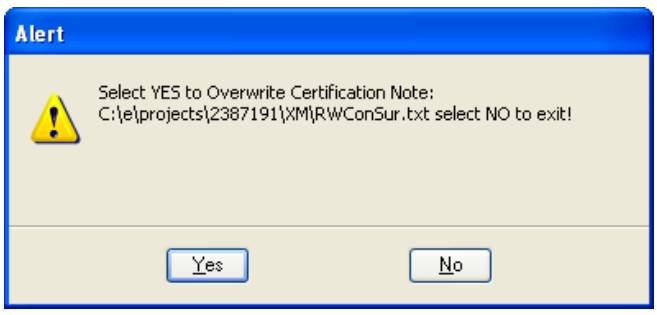
The **Certification Notes** menu item provides the user with a list of all the standard certification notes used in various R/W maps. The first selection **Text Import Settings** will set the standard text requirements for TX= (text size), LS= (line spacing) and LL = (line length) for the given scale. After selecting **New Certification Notes** the user is presented with the **R/W Mapping Certification Notes** dialog shown below. This dialog contains the list of certification notes by which the user may scroll up or down, select the desired note and then select the OK button. The selected certification note, such as **Control Survey Certification**, shown as selected in the dialog below will then open a MicroStation Basic macro dialog box containing areas for information input that are required for the selected certification note.





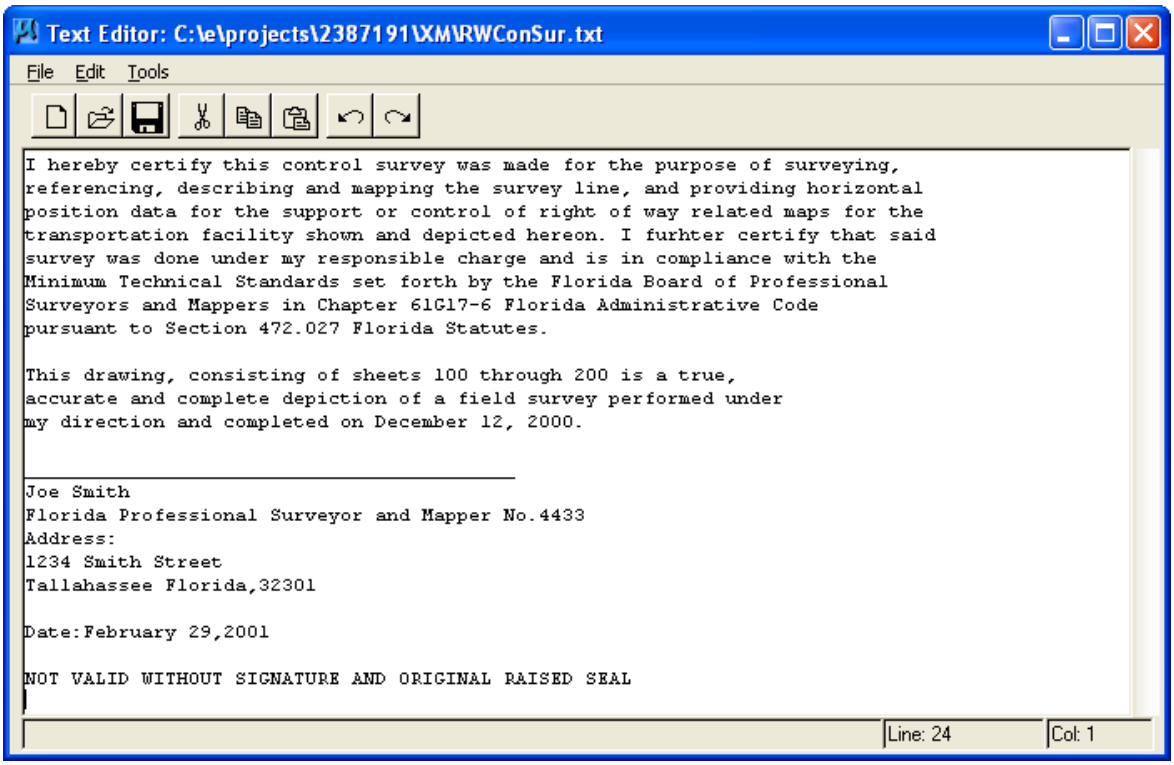
Once all required information has been input into the corresponding dialog for the certification note the user then selects OK. The program will search the certification notes directory for the required note and copy the note to the users working directory. An Alert dialog will display the directory path in which the note has been copied and prompt the user to continue or exit by selecting No.

Note Each certification note is created with a unique name and should not be changed by the user.



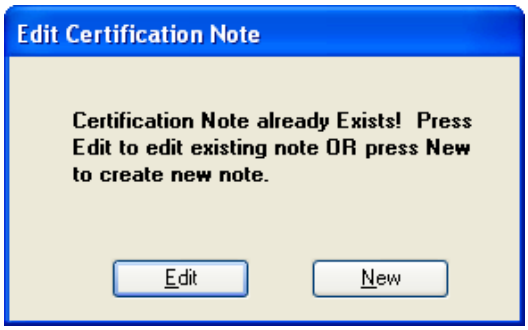
 © 2015 FDOT

If the user selects **Yes,** the note will then be overwritten and all information previously supplied by the user will be placed into the required locations within the note. The note will then be placed into a text editor dialog as shown below for any additional editing.



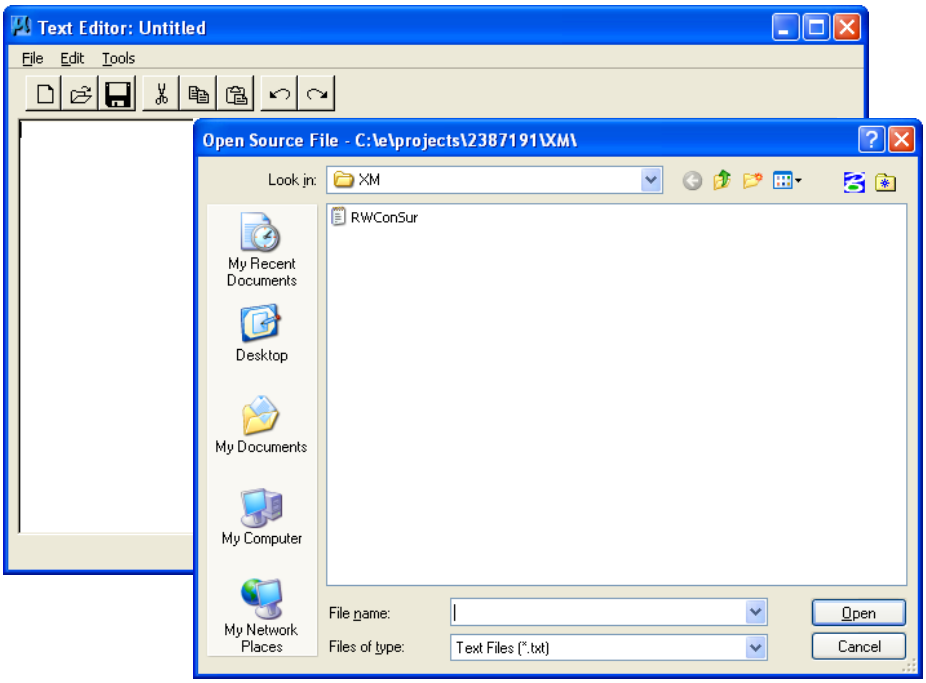
If additional changes to the note are made the user should save these changes by selecting **Save>File**. **Selecting Tools > Import Text** from the editor dialog and then place the certification note into the design file. The certification note will be attached to the MicroStation cursor for placement by a data point into the design file.

There are two methods for editing an existing certification note. In the first method the user should be located in the required working directory for the program to find the existing note. By selecting **Certification Notes > New Certification Notes**, which will again display the **R/W Mapping Certification Notes** dialog, the user can then select the name of an existing note previously created in that directory. The dialog shown below will prompt the user to edit the existing note by selecting Edit and the note will then be placed into a text editor, or create a new note by selecting New in which the corresponding input dialog for that note will be displayed.



 © 2015 FDOT

The second method is to select **Certification Notes >Edit Certification Note**, which will open the text editor and **Open Source File** dialog allowing the user to navigate to the desired certification note for editing.



 © 2015 FDOT

RW CERTIFICATION NOTE EXAMPLES

The Right of Way FDOT Menu provides a variety of **Certification Notes** for use by the FDOT Right-of-Way Mapper. The Certification Notes fall into six categories: *Clerk of Court, Control Survey, General Note, Maintenance Map, Monumentation Map, and Legal Description*. The type of Certification Note to be created or edited is selected by left-clicking to highlight the desired note; then, clicking the **OK** button on the R/W Mapping Certification Notes dialog.

Samples of each Certification Note are shown next.

- **Clerk of Court –**

  Filed for record in the office of the Clerk of the Circuit Court
  for the County of Pacso, State of Florida, in Road Plat
  Book 77, Page 64, on the 21 day of February, A.D. 2007.

  _____
  Clerk of the Circuit Court
  Pacso County, Florida

- **Clerk of Court (Roadway Corridor) –**

  Filed for record in the office of the Clerk of the Circuit Court
  for the County of Pasco, State of Florida, in Road Plat
  Book 77, Page 23, on the 21 day of February, A.D. 2007.

  _____
  Clerk of the Circuit Court
  Pasco County, Florida

  This map was perpared under the provision of Section
  337.243, Florida Statutes.

- **Clerk of Court (Transfer) –**

  This right of way map when recorded is an instrument of
  conveyance, transferring in accordance with Florida Statutes
  337.29 (3) all right, title, and interest of the Florida
  Department of Transportation in the road, street, highway,
  set forth on this map to Pasco County.

  Recorded in Public Records of Pasco County, Florida,
  this 21 day of February , A.D.2007, in Road Plat Book 77, Page 64.

  _____
  Clerk of the Circuit Court
  Pasco County, Florida

 © 2015 FDOT

- **Control Survey Certification –**

  I hereby certify this control survey was made for the purpose of surveying, referencing, describing and mapping the survey line, and providing horizontal position data for the support or control of right of way related maps for the transportation facility shown and depicted hereon. I furhter certify that said survey was done under my responsible charge and is in compliance with the Minimum Technical Standards set forth by the Florida Board of Professional Surveyors and Mappers in Chapter 5J-17 Florida Administrative Code pursuant to Section 472.027 Florida Statutes.

  This drawing, consisting of sheets 2 through 3 is a true, accurate and complete depiction of a field survey performed under my direction and completed on February 20, 2007.

  _____

  John H. Doe
  Florida Professional Surveyor and Mapper No.1776
  Address:
  1234 W. Meadowbrook Street
  Lutz Florida,33558

  Date:February 21,2007

  NOT VALID WITHOUT SIGNATURE AND ORIGINAL RAISED SEAL

- **General Note (Centerline/Zones) –**

  1. (ENTER BEARING BASE INFORMATION HERE)
  2. Property boundaries determined from field survey, plats of record, and record title.
  3. Underground foundation encroachments not located.
  4. Right of Way monuments to be set after construction of project is complete.
  5. Only fixed improvements pertinent to the parcels to be acquired are shown.

     Fixed interior improvements not located.
  6. This Right of Way map was prepared for the purpose of

     preparing legal land descriptions, acquisition documents, monumentation, property management, and as an aid in the appraisal of the right of way required for transportation facilities.
     THIS MAP IS NOT A SURVEY.
  7. This Right of Way Map is supported by a Right of Way Control

     Survey dated February 20,2007, prepared under the responsible charge of John H. Doe, Florida Professional Surveyor and Mapper number 1776. Certified copies of this survey are filed of record in the District 1 Office in Bartow, Florida.

 © 2015 FDOT

- **Maintenance Map Certification –**

  THIS IS TO CERTIFY that sheets numbered 2 to 3, inclusive, constitute a true copy of the State of the Florida Department of Transportation Maintenance Map for a portion of State Road 54 designated as 12345678901 in Pasco County, Florida.

  THE PROPERTY labeled (Enter Label Used) on said sheets has been vested in the State of Florida Department of Transportation pursuant to the provision of Section 95.361 Florida Statutes.

  IN WITNESS WHEREOF, we have hereunto set our hands and affixed the seal of the State of Florida Department of Transportation, at Bartow, Florida, this 21 day of February A.D.2007.

  _____ _____

  District Secretary (Witness)
  Department of Transportation
  State of Florida.

- **Maintenance Map (Engineer) –**

  This is to certify that the right of way limits as shown on this map were identified by myself as having been maintained continuously for four (4) years without interruption.

  By: _____
  John H. Doe
  Maintenance Engineer

- **Maintenance Map (Surveyor) –**

  This survey was performed for the specific purpose of establishing a survey line and locating the limits of maintained right of way as identified by the Maintenance Engineer for the transportation facility shown and depicted hereon. I hereby certify that to the best of my knowledge and belief this is a true, accurate and complete depiction of a field survey performed under my direction and completed on February 20, 2007. I further certify that said drawing is in compliance with the Minimum Technical Standards as set forth by the Florida Board of Professional Surveyors and Mappers, in Chapter 5J-17 Florida Administrative Code pursuant to Section 472.027, Florida Statutes.,

  _____

  John H. Doe
  Florida Professional Surveyor and Mappers No.1776
  Address:
  1234 W. Meadowbrook Street
  Lutz Florida,33558

  Date:February 21,2007

  NOT VALID WITHOUT SIGNATURE AND ORIGINAL RAISED SEAL

 © 2015 FDOT

- **Monumentation Map Certification –**

  This certificate is made exclusively to the Florida Department of Transportation.

  This survey was performed for the specific purpose of monumenting the existing right of way only for the tranportation facility shown hereon. I hereby certify that to the best of my knowledge and belief, the right of way monumentation as shown by the symbol for Permanent Right of Way Markers (P.R/W M.) and depicted on this drawing, consisting of sheets 2 through 3, is a true, accurate and complete depiction of a field survey performed under my direction and completed on February 20, 2007. I further certify that said drawing is in compliance with the Minimum Technical Standards for surveys as set forth by the Florida Board of Professional Surveyors and Mappers, in Chapter 5J-17 Florida Administrative Code pursuant to Section 472.027, Florida Statutes.

  _____
  John H. Doe
  Florida Professional Surveyor and Mapper No.1776
  Address:
  1234 W. Meadowbrook Street
  Florida,33558

  Date:February 21,2007

  NOT VALID WITHOUT SIGNATURE AND ORIGINAL RAISED SEAL

- **Legal Description Certification –**

  I hereby certify that, to the best of my knowledge and belief, the attached legal descriptions of Parcels 100 through 129 as shown on the Right of Way Maps designated as 12345678901 are true, accurate,and were prepared under my direction.

  I further certify that said legal descriptions are in compliance with the Minimum Technical Standards as set forth by the Florida Board of Professional Surveyors and Mappers, in Chapter 61G17-6 Florida Administrative Code pursuant to Section 472.027, Florida Statutes.

  _____
  John H. Doe
  Florida Professional Surveyor and Mapper No.1776
  Address:
  1234 W. Meadowbrook Street
  Lutz Florida,33558

  Date:February 21,2007

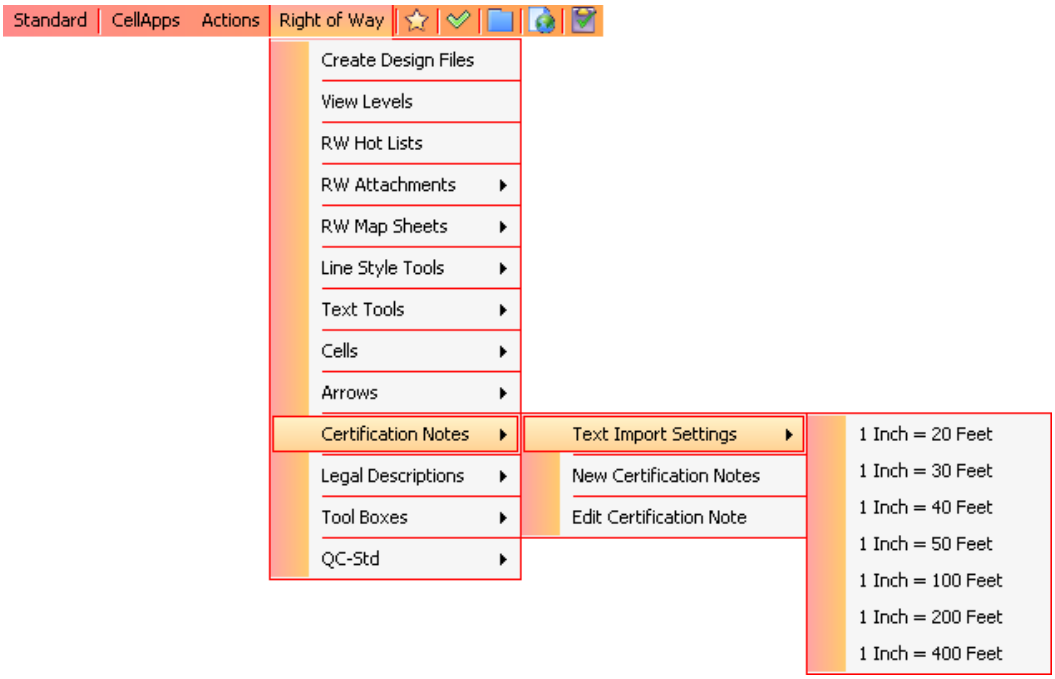
  NOT VALID WITHOUT SIGNATURE AND ORIGINAL RAISED SEAL

 © 2015 FDOT

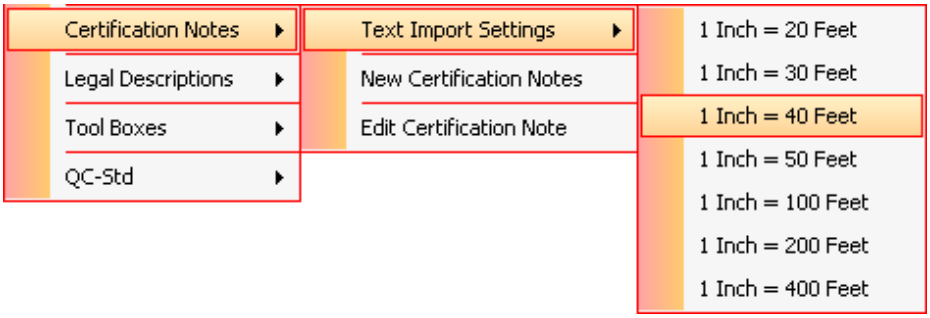
TEXT IMPORT SETTINGS

In order to achieve the correct display for the Certification Notes, the user must first set the Text Import Settings. This will ensure that the Certification Notes are placed at the correct scale for the Right-of-Way map being certified. In general, the Text Import Settings should match the Plot Scale of the design file. The steps for setting the Text Import Settings are shown next.

1. Select **Right of Way > Certification Notes > Text Import Settings** as shown next.



2. Select the desired *Text Scale* from the list that is displayed under *Text Import Settings*. The next example shows a *Text Scale* of **1 Inch = 40 Feet**. The user is now ready to select a Certification Note to place in the Right-of-Way map.



 © 2015 FDOT

NEW CERTIFICATION NOTE

When the first occurrence of a particular certification note is placed into a Right-of-Way map in the project, it will be considered a new note and any subsequent placement of the same type of certification note will be considered as an edit to the pre-existing certification note. This is due to the fact that the certification note macro creates and edits a text file that is placed in the *\rwmap* folder of the FDOT CADD project.

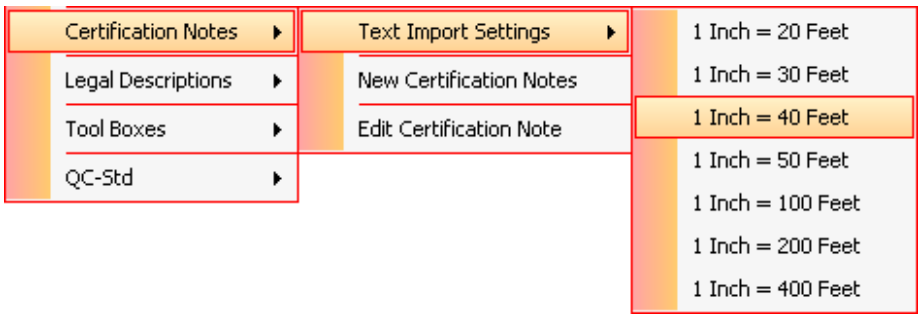
A table of the various certification notes and the corresponding text file is shown next.

Certification Note	Associated Text File
Clerk of Court	RWClerkNote.txt
Clerk of Court (Roadway Corridor)	RWClerkCor.txt
Clerk of Court (Transfer)	RWClerkTrn.txt
Control Survey Certification	RWConSur.txt
General Note (Centerline/Zones)	RWGeneral.txt
Maintenance Map Certification	RWMaint.txt
Maintenance Map (Engineer)	RWMaintEg.txt
Maintenance Map (Surveyor)	RWMaintSr.txt
Monumentation Map Certification	RWMonumt.txt
Legal Description Certification	RWDescrip.txt

To place a new Certification Note in a Right-of-Way map, completed the following steps.

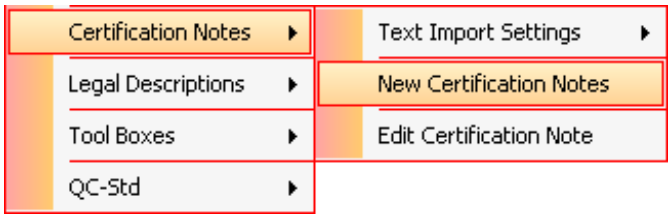
The example shows the placement of a **Clerk of Court** *Certification Note*. Other Certification Notes may have slightly different dialogs to allow the user to input needed information.

1. If necessary, set the *Text Import Settings* by selecting **Certification Notes > Text Import Settings** from the Right of Way FDOT Menu. The next example shows a *Text Import Settings* of **1 Inch = 40 Feet**.

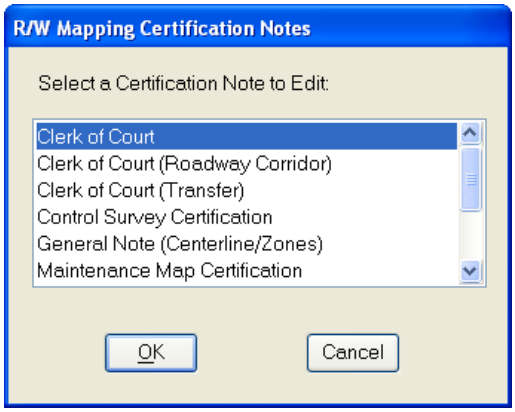


 © 2015 FDOT

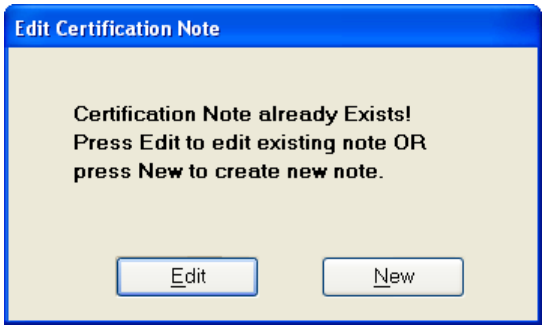
2. Select **Certification Notes > New Certification Notes** from the Right of Way FDOT Menu.



3. Select the desired Right-of-Way certification note from the list that is displayed. The next example shows the **Clerk of Court** *Certification Note*. Click **OK** to confirm the selection of the certification note and start the macro.

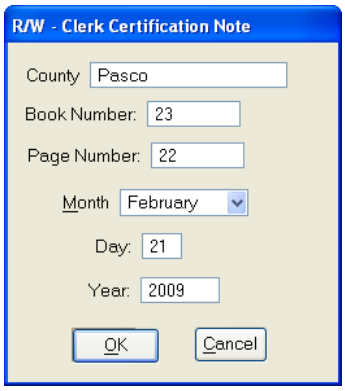


4. If the *Certification Note* already exists in \rwmap folder of the project, the user will see the following dialog. Click **Edit** to edit the existing note or click **New** to create a new note. Upon the first activation of the macro for a particular certification note, the user will not see the dialog and a new note will be created automatically.



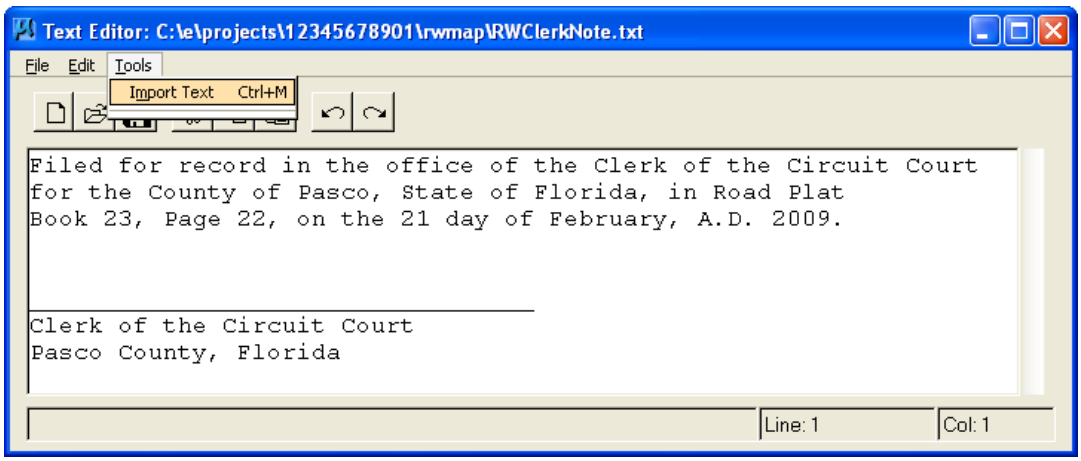
 © 2015 FDOT

5. Enter any necessary information for the particular certification note. After all information is filled in, the Text Editor window will display allowing the user to make any edits before placing the *Certification Note* into the design file. The next example shows the **Clerk of Court** *Certification Note.*



6. Before the Text Editor window displays, the user will again be prompted, if the *Certification Note* already exists. Click **Yes** to Overwrite the existing *Certification Note* or click **No** to exit the macro.

7. Make any desired changes or additions to the *Certification Note* text in the Text Editor window and then select **Tools** > **Import Text** to attach the *Certification Note* to the MicroStation cursor.



Note If any changes are made to the **Certification Note** text, the user should select **File > Save** from the **Text Editor** to save the information to the appropriate text file in the project. The Text Justification is set in the macro to be Lower Left.

8. Place the *Certification Note* at the desired location within the Right-of-Way map and left-click to confirm the placement of the text. Close the Text Editor window when finished.

Filed for record in the office of the Clerk of the Circuit Court
for the County of Pasco, State of Florida, in Road Plat
Book 23, Page 22, on the 21 day of February, A.D. 2007.

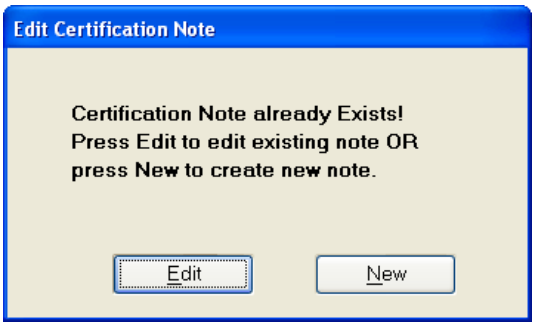
Clerk of the Circuit Court
Pasco County, Florida

RIGHT OF WAY MAP	FLORIDA DEPARTMENT OF TRANSPORTATION SURVEYING AND MAPPING

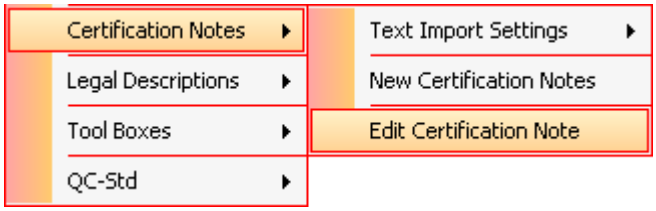
 © 2015 FDOT

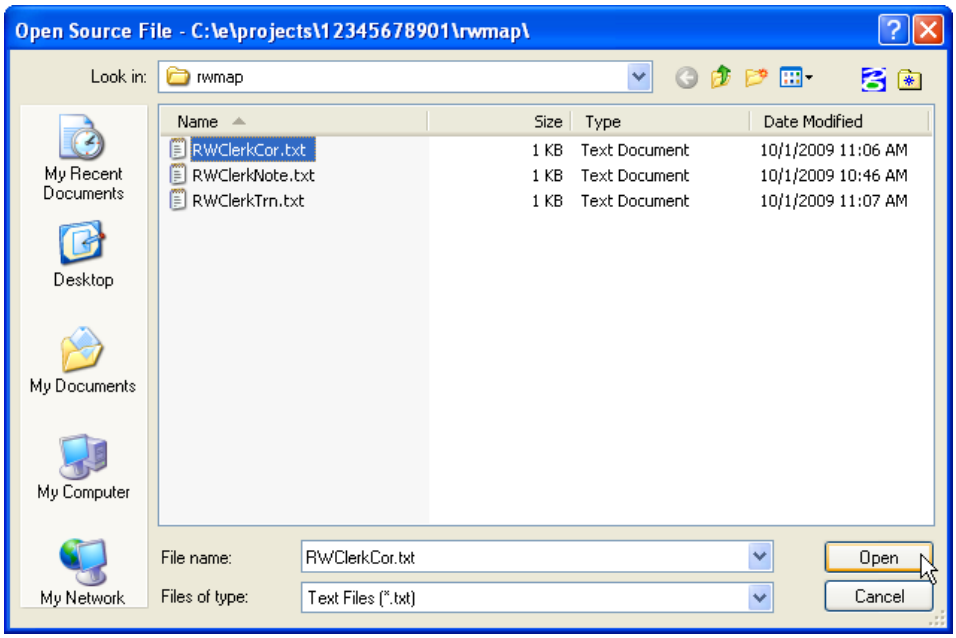
EDIT CERTIFICATION NOTE

There are two methods for editing an existing certification note. The first method is the same as the *New Certification Note* process shown previously. In this case, the user should be in a Right-of-Way map located in the \rwmap folder of the FDOT CADD project. This will allow the macro to find the existing Certification Notes' text file. By selecting **Certification Notes > New Certification Notes** from the Right of Way FDOT Menu, the R/W Mapping Certification Notes dialog will again be displayed. Then the user can select the name of an existing note previously created in that directory. The dialog shown next will prompt the user to edit the existing note by selecting Edit and the note will then be placed into a text editor, or create a new note by selecting New in which the corresponding input dialog for that note will be displayed.



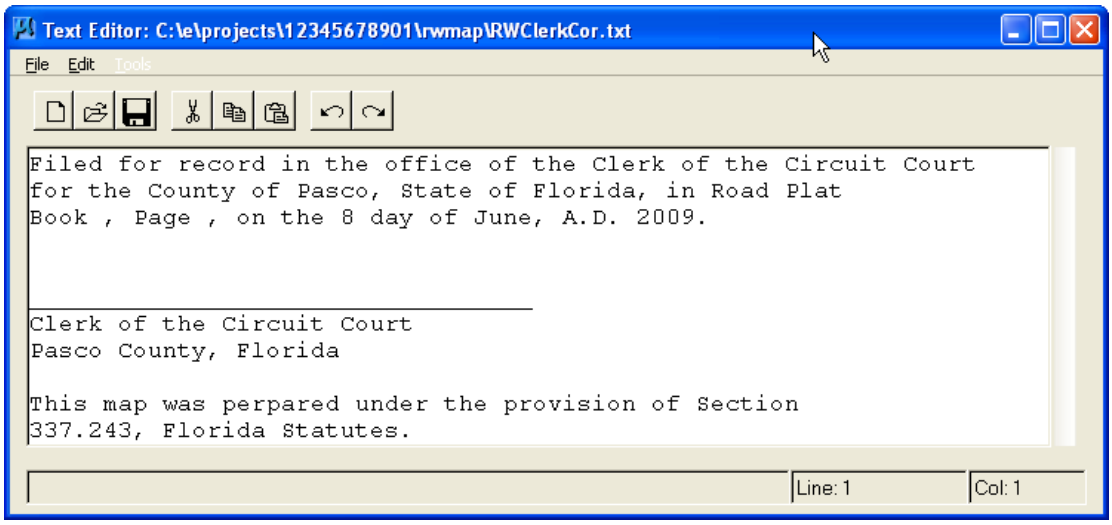
The second method is to select **Certification Notes > Edit Certification Note** from the Right of Way FDOT Menu as shown next. This will open the Text Editor and Open Source File dialog allowing the user to navigate to the desired certification note for editing.





 © 2015 FDOT

Highlighting the *Certification Note* to edit and clicking **OK** will open the selected *Certification Note* in the MicroStation Text Editor.



RW GENERAL NOTE

The FDOT CADD software provides the Right-of-Way Mapper with a text file that contains a *General Notes* sample. Editing of the *General Notes* can be done via the MicroStation Text Editor after placement of the note into the DGN file or the delivered *General Notes* text file can be edited and saved for future import into MicroStation. Examples of the text file as delivered with the FDOT CADD software and a completed *General Notes* entry are shown next:

1. This right of way map is supported by a right of way control survey Section Number79030, F.P. Number 240992-1, Dated March 6, 2006, prepared under the responsible charge of John H.Doe, Professional Surveryor and Mapper Number 1234. Certified copies of this survey are filed in the Surveying and Mapping unit of the Florida Department of Transportation, District Five Office.

2. Property boundaries determined from field survey, plats of record, and record title.

3. Underground foundation encroachments not located.

4. Right of Way monuments to be set after construction of project is complete.

5. Only fixed improvements pertinent to the parcels to be acquired are shown. Fixed interior improvements not located.

6. This Right of Way map was prepared for the purpose of preparing legal land descriptions, acquisition documents, monumentation, property management, and as an aid in the appraisal of the right of way required for transportation facilities.
   THIS MAP IS NOT A SURVEY.

7. This Right of Way Map is supported by a Right of Way Control Survey dated _____, prepared under the responsible charge of _____, Florida Professional Surveyor and Mapper number ____. Certified copies of this survey are filed of record in the District _____ Office in _____.

 © 2015 FDOT

RW LEGEND

The FDOT CADD software also provides the Right-of-Way Mapper with a text file that contains a Legend of the most used Right-of-Way abbreviations. If needed, the FDOT Right-of-Way Mapper can edit the Legend via the MicroStation Text Editor after placement of the note into the DGN file or the delivered Legend text file can be edited and saved for future import into MicroStation. An example of the text file as delivered with the FDOT CADD software is shown next:

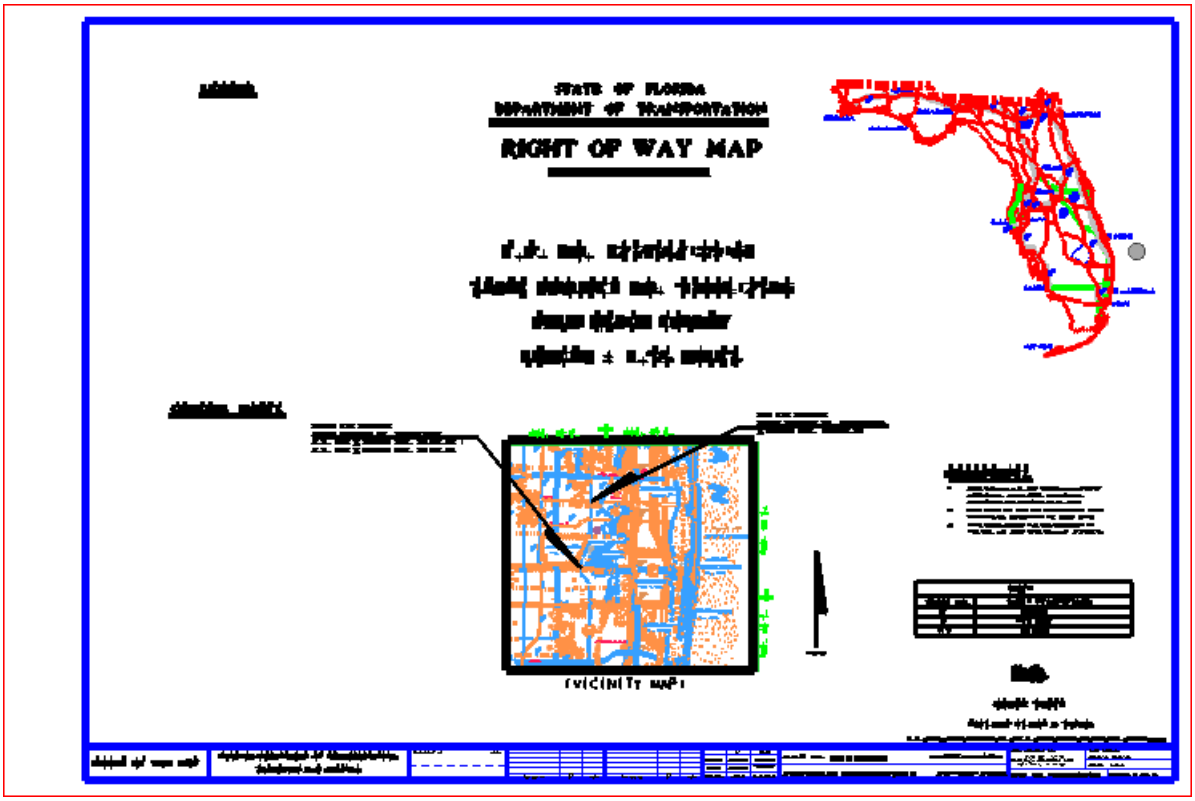
```
AC        =  ACRE
}         =  BASELINE
CB        =  CHORD BEARING
COM.      =  COMMERCIAL
CONC.     =  CONCRETE
COR.      =  CORNER
{         =  CENTERLINE
(C)       =  CALCULATED
C.M.      =  CONCRETE MONUMENT
C.R.      =  COUNTY ROAD
D         =  DEGREE
(D)       =  DEED
D.B.      =  DEED BOOK
D.E.      =  DRAINAGE EASEMENT
EXIST.    =  EXISTING
ESMT      =  EASEMENT
E.D.E.    =  EXISTING DRAINAGE EASEMENT
!         =  CURVE DELTA ANGLE
FND.      =  FOUND
(F)       =  FIELD
F.P.      =  FINANCIAL PROJECT
F.D.O.T.  =  FLORIDA DEPARTMENT OF TRANSPORTATION
I.P.      =  IRON PIPE
I.R.& C.  =  IRON ROD AND CAP
L         =  LENGTH OF CURVE
LB        =  LICENSED BUSINESS
LT.       =  LEFT
L/A       =  LIMITED ACCESS
L.O.C.    =  LIMITS OF CONSTRUCTION
MAINT.    =  MAINTENANCE
NO.       =  NUMBER
N/A       =  NOT APPLICABLE
N&D       =  NAIL & DISK
N.T.S.    =  NOT TO SCALE
N.V.A.L.  =  NON VEHICULAR ACCESS LINE
OR        =  OFFICIAL RECORD
O.R.B.    =  OFFICIAL RECORD BOOK
PG        =  PAGE
PK        =  PARKER KALON
PSM       =  PROFESSIONAL SURVEYOR AND MAPPER
          =  PROPERTY LINE
(P)       =  PLAT
P.B.      =  PLAT BOOK
P.C.      =  POINT OF CURVE
P.C.C.    =  POINT OF COMPOUND CURVE
P.I.      =  POINT OF INTERSECTION
P.O.C.    =  POINT ON CURVE
P.O.T.    =  POINT ON TANGENT
P.R.C.    =  POINT OF REVERSE CURVE
P.T.      =  POINT OF TANGENCY
R         =  RADIUS
RES.      =  RESIDENCE
RGE.      =  RANGE
RT.       =  RIGHT
R/W       =  RIGHT OF WAY
SEC.      =  SECTION
SF        =  SQUARE FEET
SRD       =  STATE ROAD DEPARTMENT
STA.      =  STATION NUMBER
T         =  TANGENT
TWP.      =  TOWNSHIP
T.B.      =  TANGENT BEARING
T.I.I.T.F.=  TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND
U.E.      =  UTILITY EASEMENT
```

 © 2015 FDOT

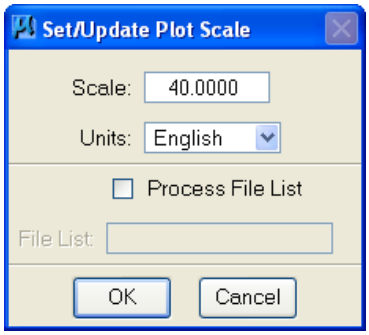
Exercise 16.1 Placing and Editing RW General Notes and Legend

➢ ***In this exercise the user will learn how to edit and place RW General Notes and Legend.***

1. Open the MicroStation file C:\E\Projects\12345678901\rwmap*rwcovr01.dgn*. The MicroStation view should display as shown.



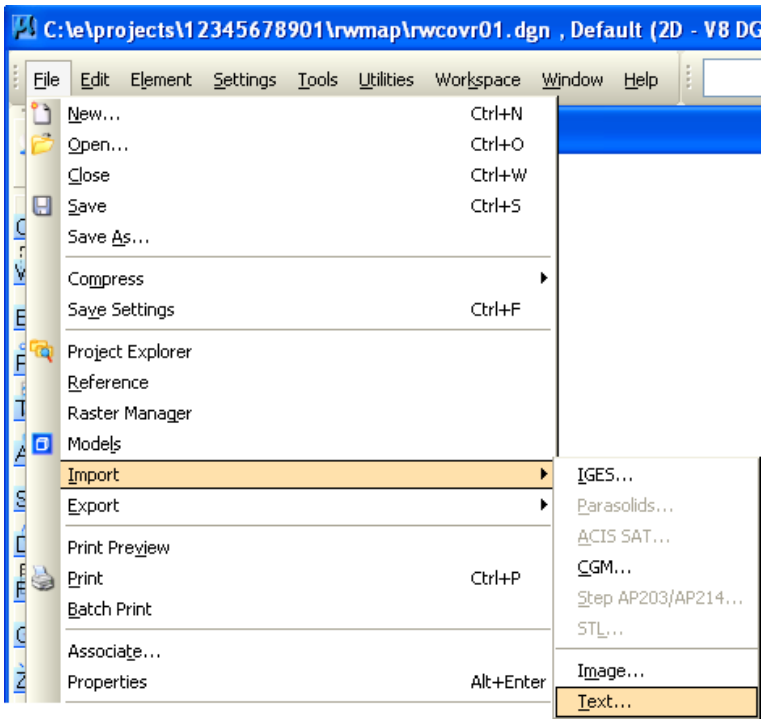
2. From the Right of Way FDOT Menu select **Actions** > **Set Plot Scale of File** as shown below.



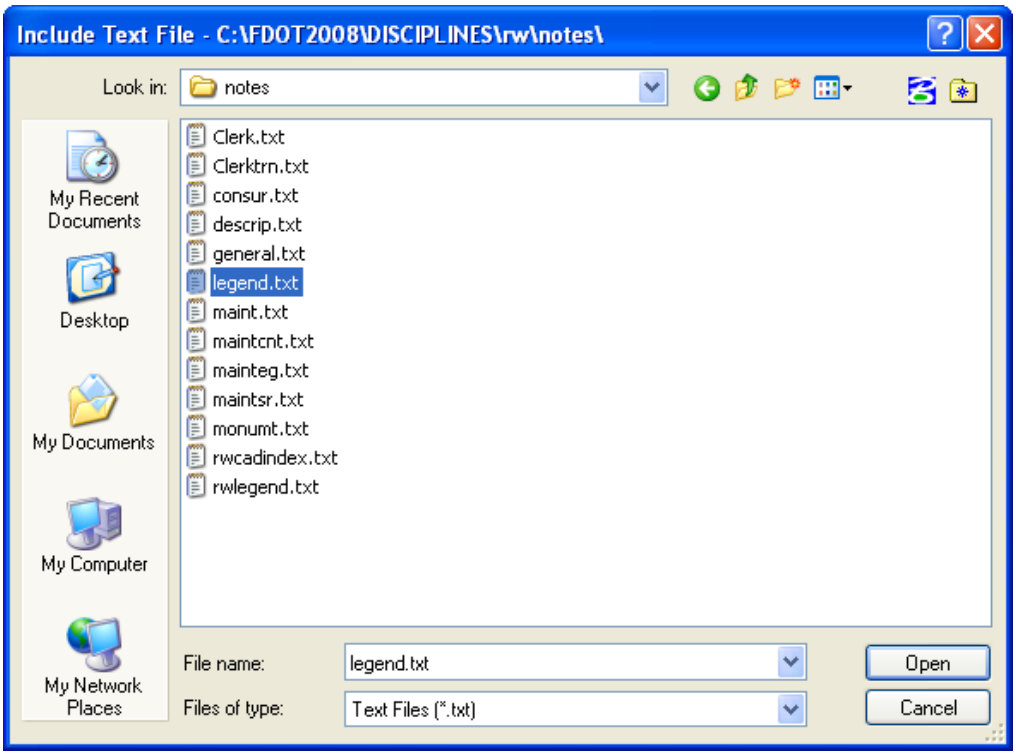
3. Set the MicroStation *Level* to **ShtLegendText** from the *Attributes* toolbar as shown below.

 © 2015 FDOT

4. Select the **File** > **Import** > **Text** from the main MicroStation menu.

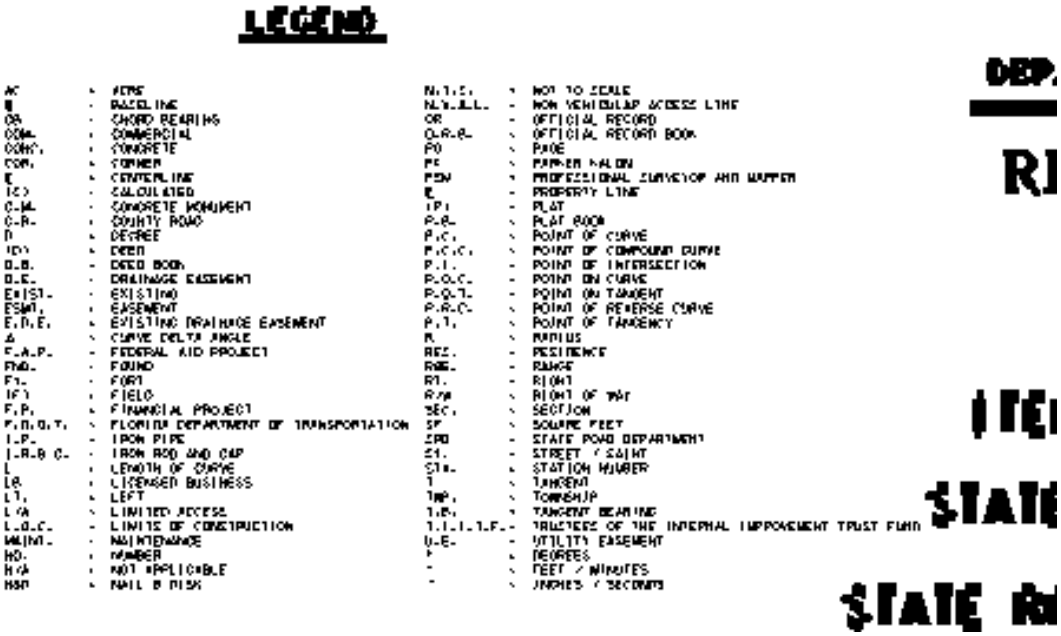


5. Navigate to C:\FDOT2010\group\rw*legend.txt* file. Left-click on the file to highlight it and then click **Open** to select the file for importing into MicroStation.



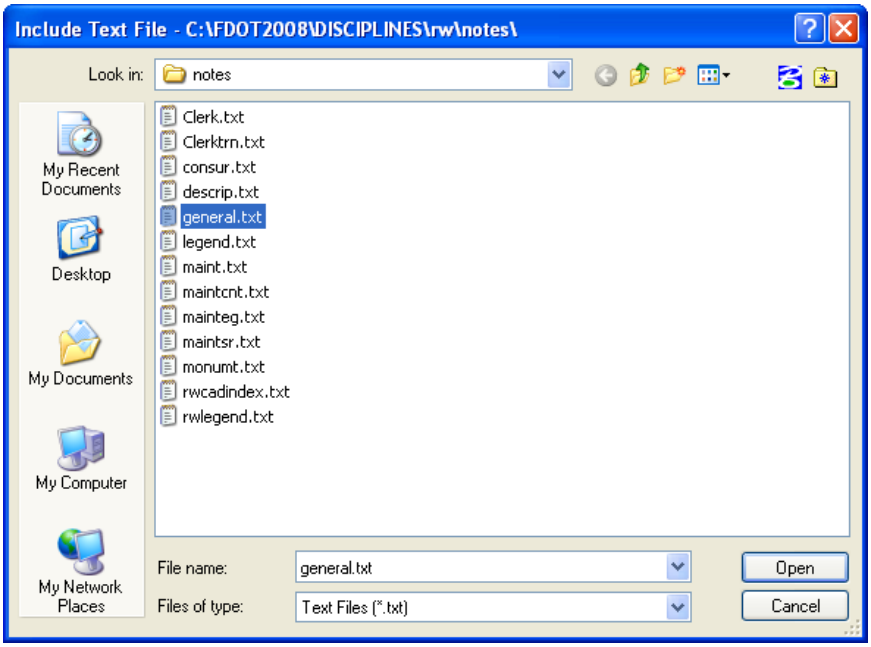
 © 2015 FDOT

6. The information in the *legend.txt* file will now be attached to the MicroStation cursor. Place the text near the location shown next and left-click to finalize the location of the text.



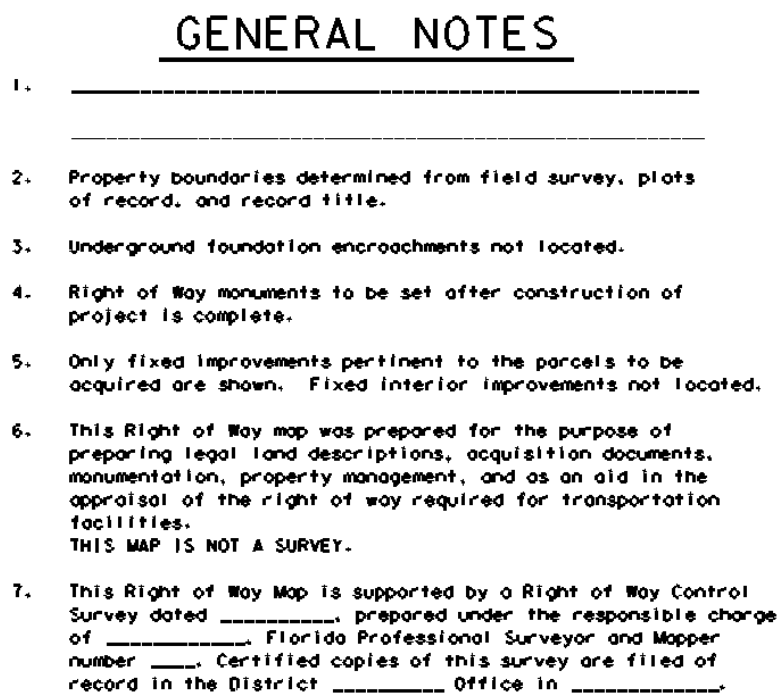
7. Set the MicroStation *Level* to **GenNotesText** from the *Attributes* toolbar as shown below.

8. Once again select **File > Import > Text** from the main MicroStation window. This time select the file **general.txt** and click **Open**.



 © 2015 FDOT

9. Place the text near the location shown next.



GENERAL NOTES

1. _____

_____

2. Property boundaries determined from field survey, plats of record, and record title.

3. Underground foundation encroachments not located.

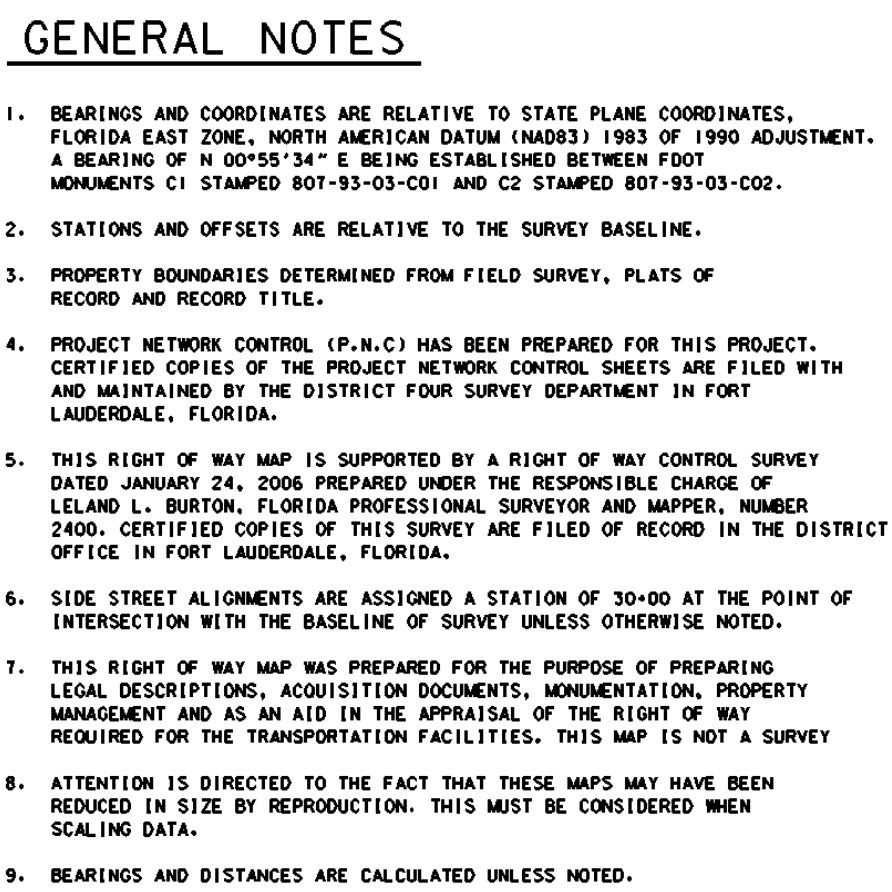
4. Right of Way monuments to be set after construction of project is complete.

5. Only fixed improvements pertinent to the parcels to be acquired are shown. Fixed interior improvements not located.

6. This Right of Way map was prepared for the purpose of preparing legal land descriptions, acquisition documents, monumentation, property management, and as an aid in the appraisal of the right of way required for transportation facilities.
THIS MAP IS NOT A SURVEY.

7. This Right of Way Map is supported by a Right of Way Control Survey dated _____, prepared under the responsible charge of _____, Florida Professional Surveyor and Mapper number ____. Certified copies of this survey are filed of record in the District _____ Office in _____.

10. Use the MicroStation Text Editor window to edit the *General Notes* as shown.



GENERAL NOTES

1. BEARINGS AND COORDINATES ARE RELATIVE TO STATE PLANE COORDINATES, FLORIDA EAST ZONE, NORTH AMERICAN DATUM (NAD83) 1983 OF 1990 ADJUSTMENT. A BEARING OF N 00°55'34" E BEING ESTABLISHED BETWEEN FDOT MONUMENTS C1 STAMPED 807-93-03-C01 AND C2 STAMPED 807-93-03-C02.

2. STATIONS AND OFFSETS ARE RELATIVE TO THE SURVEY BASELINE.

3. PROPERTY BOUNDARIES DETERMINED FROM FIELD SURVEY, PLATS OF RECORD AND RECORD TITLE.

4. PROJECT NETWORK CONTROL (P.N.C) HAS BEEN PREPARED FOR THIS PROJECT. CERTIFIED COPIES OF THE PROJECT NETWORK CONTROL SHEETS ARE FILED WITH AND MAINTAINED BY THE DISTRICT FOUR SURVEY DEPARTMENT IN FORT LAUDERDALE, FLORIDA.

5. THIS RIGHT OF WAY MAP IS SUPPORTED BY A RIGHT OF WAY CONTROL SURVEY DATED JANUARY 24, 2006 PREPARED UNDER THE RESPONSIBLE CHARGE OF LELAND L. BURTON, FLORIDA PROFESSIONAL SURVEYOR AND MAPPER, NUMBER 2400. CERTIFIED COPIES OF THIS SURVEY ARE FILED OF RECORD IN THE DISTRICT OFFICE IN FORT LAUDERDALE, FLORIDA.

6. SIDE STREET ALIGNMENTS ARE ASSIGNED A STATION OF 30+00 AT THE POINT OF INTERSECTION WITH THE BASELINE OF SURVEY UNLESS OTHERWISE NOTED.

7. THIS RIGHT OF WAY MAP WAS PREPARED FOR THE PURPOSE OF PREPARING LEGAL DESCRIPTIONS, ACQUISITION DOCUMENTS, MONUMENTATION, PROPERTY MANAGEMENT AND AS AN AID IN THE APPRAISAL OF THE RIGHT OF WAY REQUIRED FOR THE TRANSPORTATION FACILITIES. THIS MAP IS NOT A SURVEY

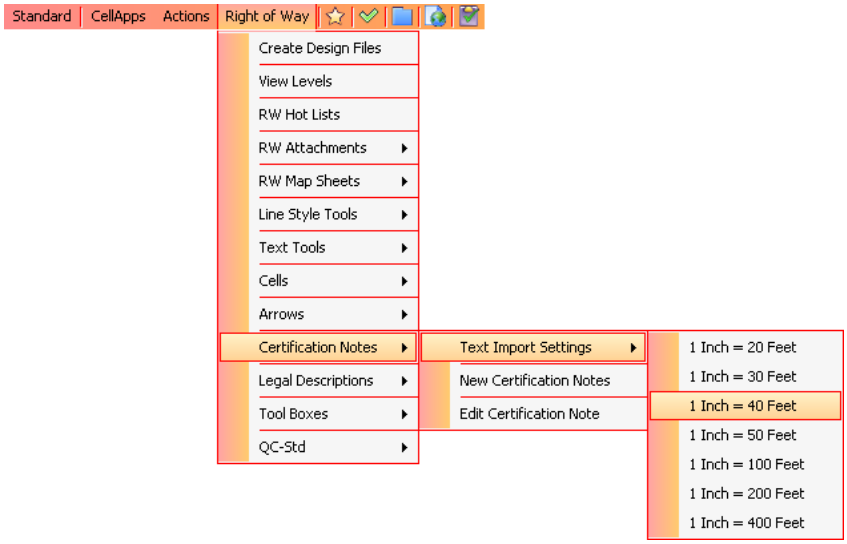
8. ATTENTION IS DIRECTED TO THE FACT THAT THESE MAPS MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN SCALING DATA.

9. BEARINGS AND DISTANCES ARE CALCULATED UNLESS NOTED.

Exercise 16.2 Using RW Certification Notes

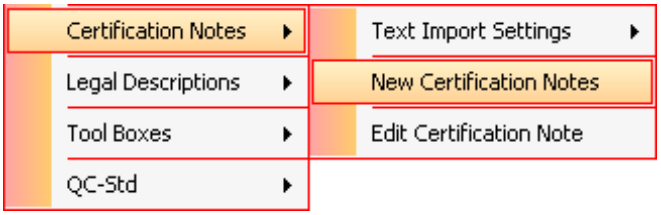
➢ ***In this exercise the user will learn how to use the RW Certification Notes.***

1. Open the DGN file C:\E\Projects\12345678901\rwmap*RW.dgn*, and set the *Text Import Settings* to **1 Inch = 40 Feet** as shown below using the Right of Way FDOT Menu**.**

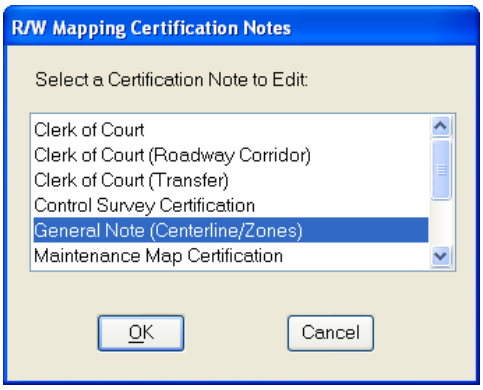


2. Set the MicroStation *Level* to **GenNotesText** from the *Attributes* toolbar as shown below.

3. From the Right of Way FDOT Menu, select **Certification Notes** > **New Certification Notes**.

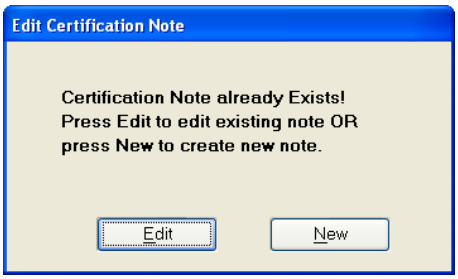


4. Select the **General Note (Centerline/Zones)** *Certification Note* and click **OK**.

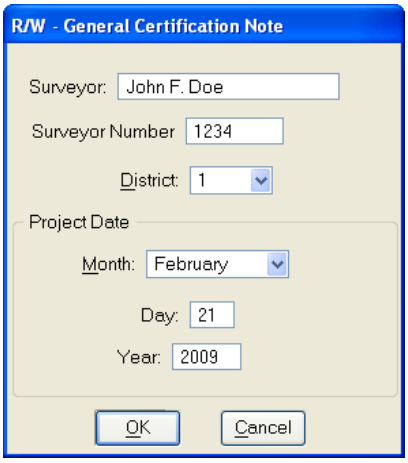


 © 2015 FDOT

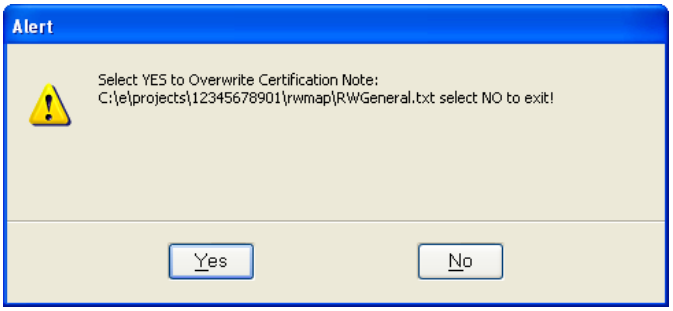
5. If the dialog displays, click **New** to create a new *Certification Note*.



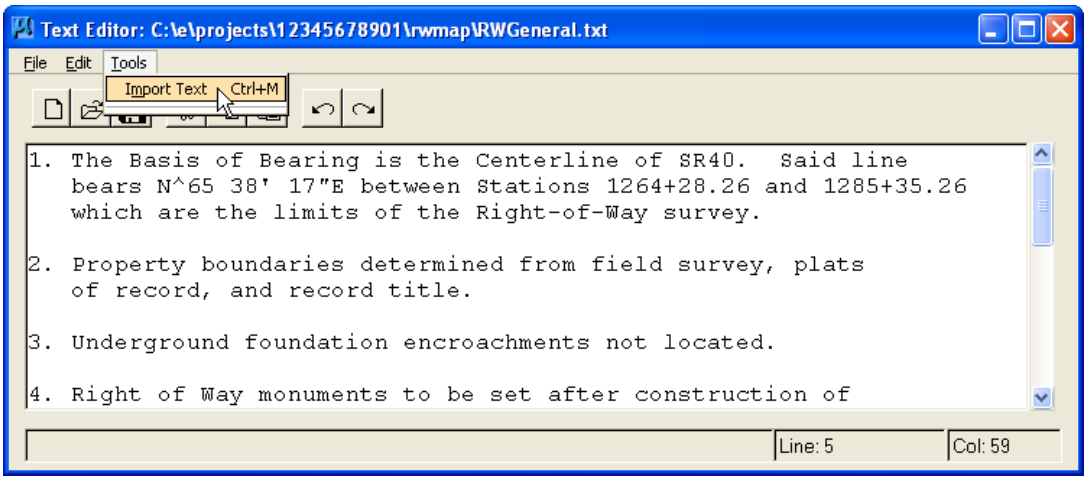
6. Enter the information as shown; then, click **OK**.



7. If the following dialog opens, click **Yes**.



8. Enter the **Basis of Bearings** as shown below. Change *Note #2* to read "**plats" NOT "plates**". Select **File** > **Save** and then **Tools** > **Import** to attach the *Certification Note* to the MicroStation cursor.



9. Place the *Certification Note* into the Right-of-Way map as shown below.

GENERAL NOTES

1. The Basis of Bearing is the Centerline of SR40. Said line bears N°65 38' 17"E between Stations 1264+28.26 and 1285+55.25 which are the limits of the Right-of-Way survey.

2. Property boundaries determined from field survey, plats of record, and record title.

3. Underground foundation encroachments not located.

4. Right of Way monuments to be set after construction of project is complete.

5. Only fixed improvements pertinent to the parcels to be acquired are shown. Fixed interior improvements not located.

6. This Right of Way map was prepared for the purpose of preparing legal land descriptions, acquisition documents, monumentation, property management, and as an aid in the appraisal of the right of way required for transportation facilities.
THIS MAP IS NOT A SURVEY.

7. This Right of Way Map is supported by a Right of Way Control Survey dated February 21,2009, prepared under the responsible charge of John F. Doe, Florida Professional Surveyor and Mapper number 1234. Certified copies of this survey are filed of record in the District 1 Office in Bartow, Florida.

 © 2015 FDOT

17 RIGHT OF WAY TAB SHEET CREATION

OBJECTIVES

This chapter will review the creation of the Right-of-Way Table of Ownerships Sheet. Items covered will include:

- Creation of the Right-of-Way Table of Ownerships DGN File
- Placement of the RWTAB Sheet Cell
- Importing Information into the RWTAB Sheet Cell

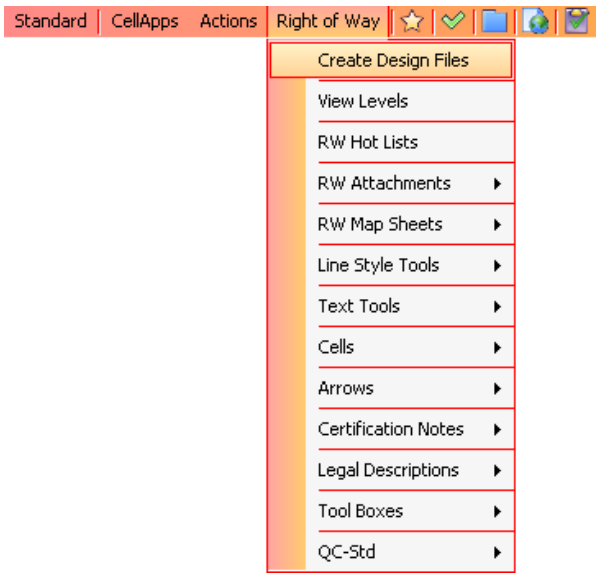
INTRODUCTION

During the Right-of-Way process it is usually necessary to acquire additional property in order to expand the roadway width, add acceleration/deceleration lanes, or for mitigation and other purposes. These properties are called parcels and their original, taking, and remaining values are tabulated along with Ownership information. This information is then placed into the Right-of-Way Table of Ownerships Sheet which is more commonly called a Tab sheet.

This chapter will cover the creation of the RW Tab Sheet, a variety of ways to place the Right-of-Way Tab sheet cell, and methods for completing the information required in the Tab sheet.

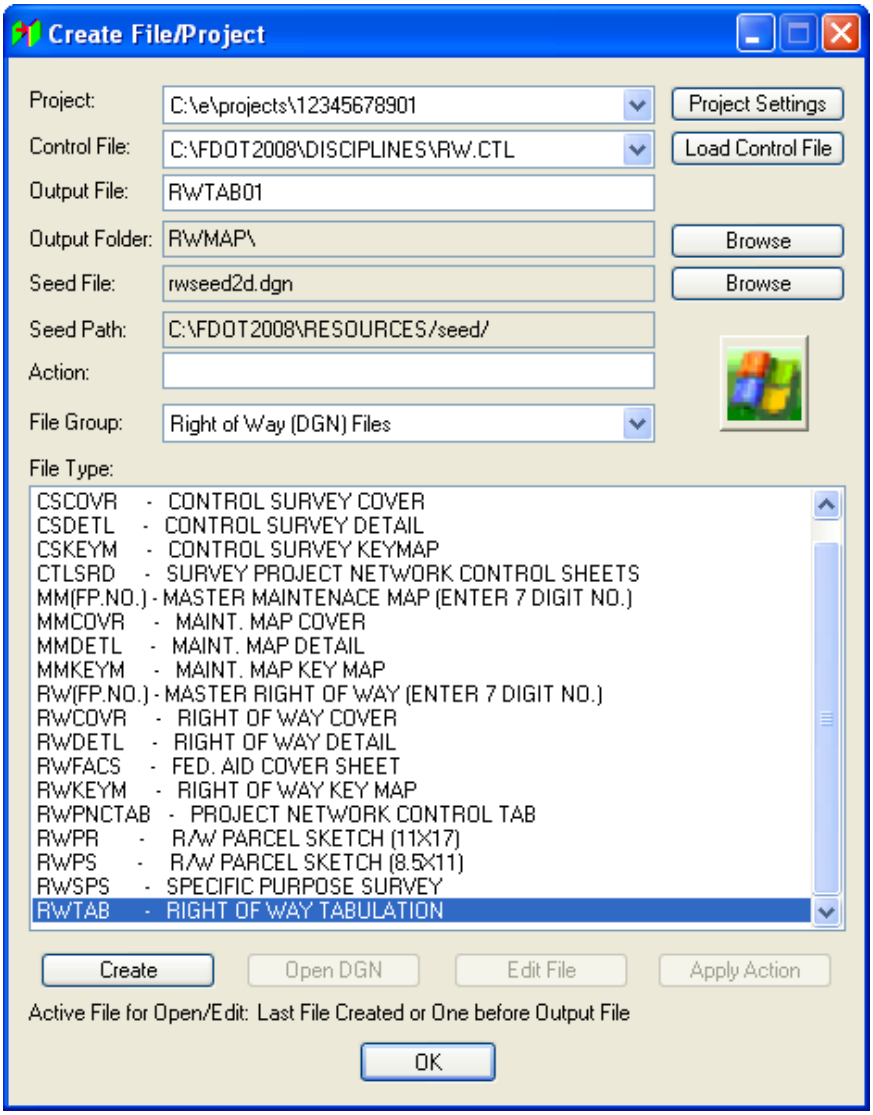
CREATION OF THE RW TAB DGN FILE

The Right-of-Way Tab sheet can be created from the *Create File/Project* tool. The *Create File/Project* tool can be activated by selecting **Right of Way** > **Create Design Files** from the Right of Way FDOT Menu as shown next.



© 2015 FDOT

This will bring up the Create File/Project dialog where the user can select the *File Group* of Right of Way (DGN) Files and the *File Type* of **RWTAB – RIGHT OF WAY TABULATION**. Clicking **Create** will create the *RWTAB DGN* file.



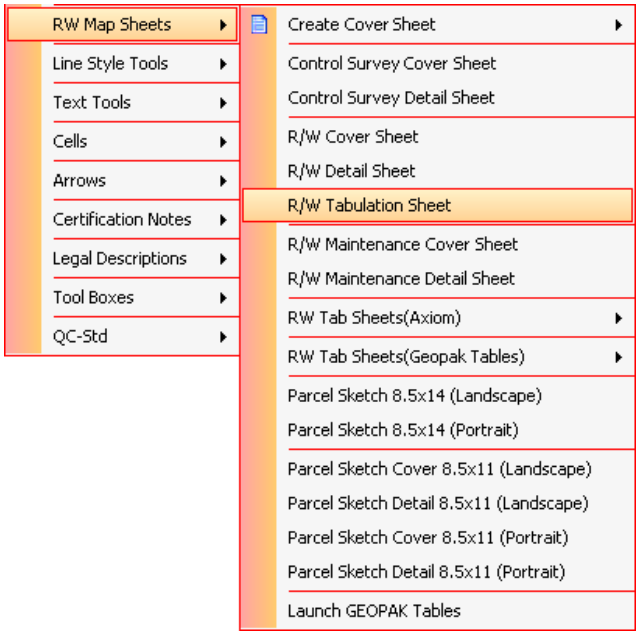
 © 2015 FDOT

PLACEMENT OF THE RW TAB SHEET CELL

There are three ways to place a RW Tab Sheet Cell from the Right of Way FDOT Menu. All methods are under the RW Map Sheets menu on the Right of Way FDOT Menu. All three methods are shown below.

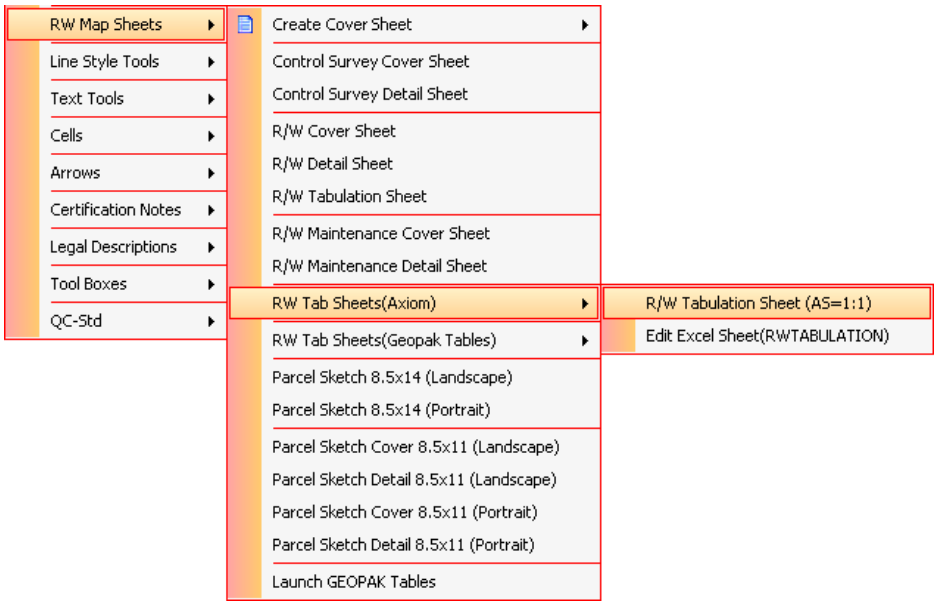
RW TABULATION SHEET

This method places a **RWTAB** Sheet Cell at the current plot scale of the DGN file.



RW TAB SHEETS (AXIOM)

This method places a **RWTAB** Sheet Cell at a 1:1 scale, which is suitable for use with the Axiom *Edit Excel Sheet (RWTABULATION)* tool.



 © 2015 FDOT

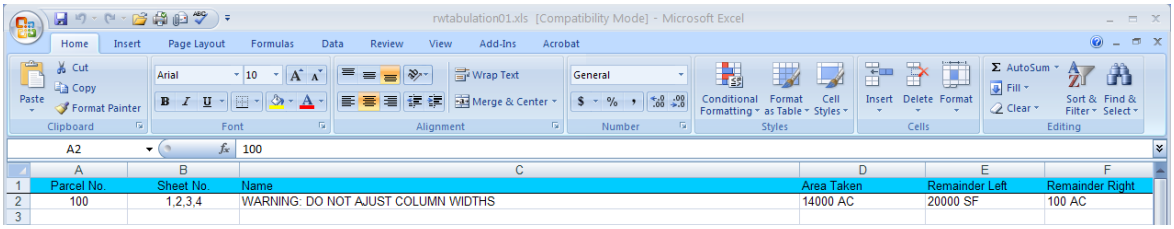
- R/W Tabulation Sheet (AS = 1:1)

Places a R/W Tabulation sheet into the current design file at a 1:1 scale. The user should have previously created a RWTAB__.DGN standard design file for tabulation data.

- Edit Excel Sheet (RWTABULATION)

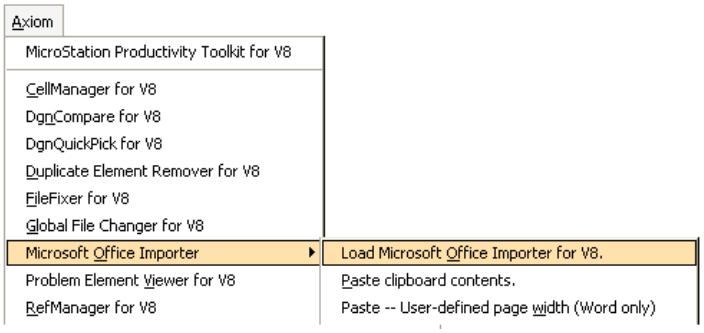
This option creates an Excel spreadsheet entitled "RWTABULATION01.XLS" into the user's current working directory.

Warning *Do not adjust column widths on spreadsheet or data will not be placed correctly on tabulation sheet.*

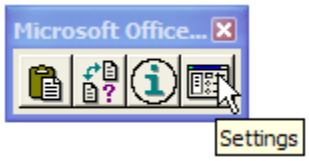


This spreadsheet is specifically designed to work with Axiom's "Microsoft Office Importer for V8".

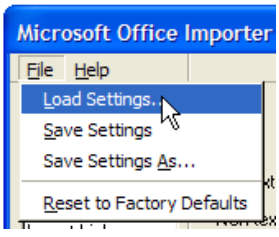
The Office Importer requires the use of an "ini" file for specific settings. For R/W this file is called *office.ini* and is located in the \fdot2010\resources\data directory. The user should check that this file is attached by first opening the Office Importer dialog as shown:



- Once selected, the Office Importer dialog box should appear and the user should select the Settings button as shown:



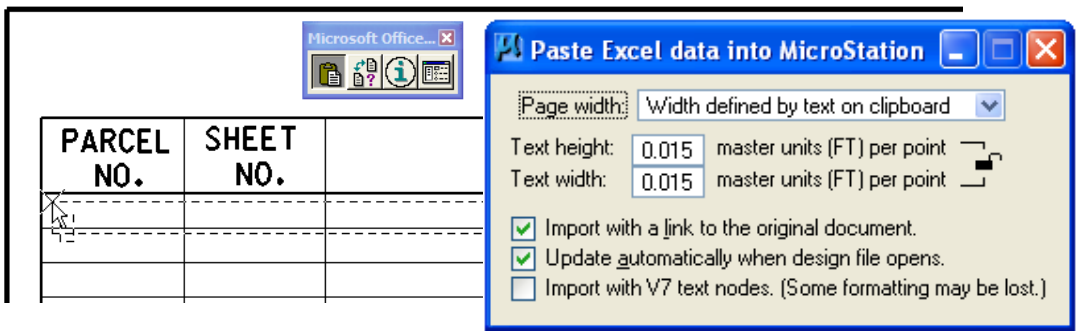
- The Settings dialog should display the required file attached. If the required *office.ini* is not attached, then the correct file can be accessed by selecting:



Warning *Do not make any adjustments to the current settings in the office.ini file or the program will not work correctly.*

The Excel spreadsheet can be edited for additional data by placing the required information in each column and saving the file. Once data has been saved, the rows that are to be added to the tabulation sheet can be highlighted by standard window operations and then select Edit > Copy. Excel will display a highlighted border around the selected data. To place this data onto the tabulation sheet select the Paste button.

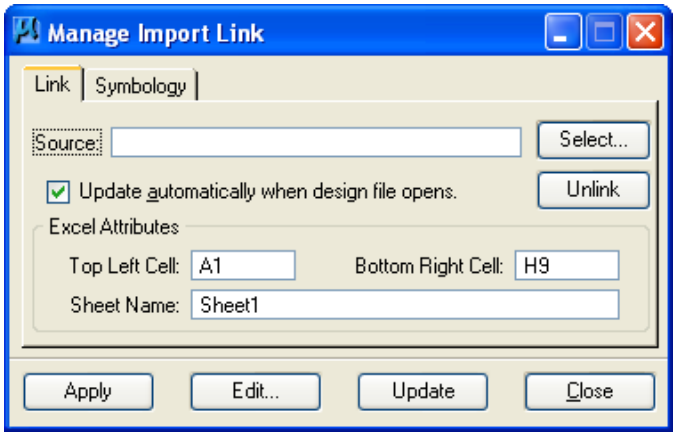
After the Office Importer Paste button has been selected, the data will be attached to the cursor with a border displayed surrounding the copied information.



The data can be placed on any line within the tabulation sheet by placing a tentative button at the upper left corner of the desired line and then accepted by a data point.

Changes to the existing data can be accomplished by selecting the Manage button. The "Manage" tool on the Main Task box allows you to update linked information manually, edit the source document or change the status of the links.

- After the Manage button has been selected the user will be prompted: Manage Import Link > Identify element
- Click any portion of the part of the linked data that you want to update, and the "Manage Import Link" dialogue box will appear.

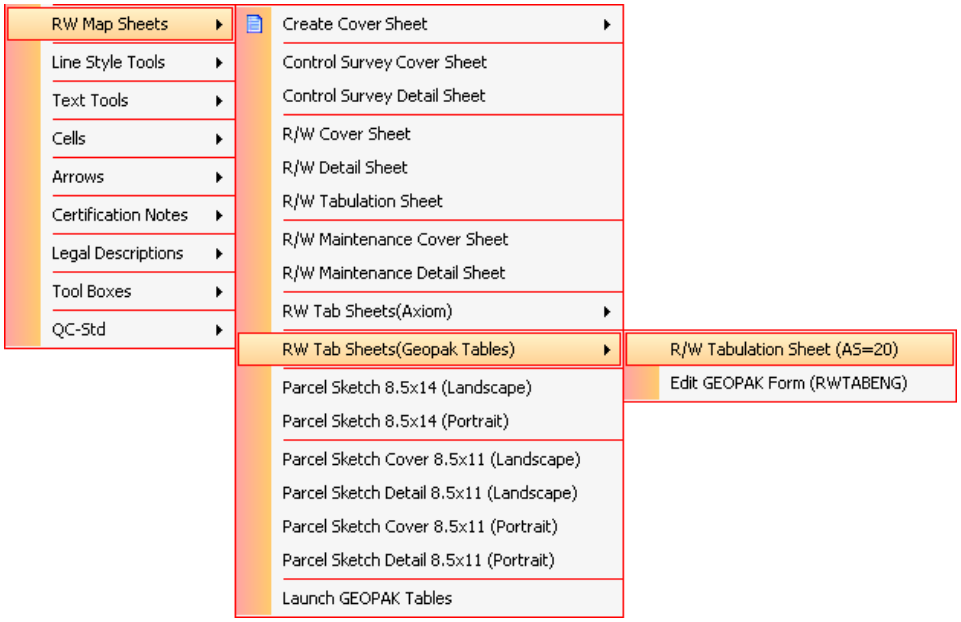


- The Update button must be selected for data to be changed. Office Importer will also update linked data that has been changed in the current spreadsheet each time the linked design file is opened. For additional information refer to the Office Importer Help selection.

 © 2015 FDOT

- RW Tab Sheets (GEOPAK Tables)

This method places a **RWTAB** Sheet Cell at a scale of 1" = 20' into the DGN file.



IMPORTING INTO A RW TAB SHEET CELL

There are also three methods for importing text information into the RWTAB Sheet Cell. The FDOT Right-of-Way Mapper can either:

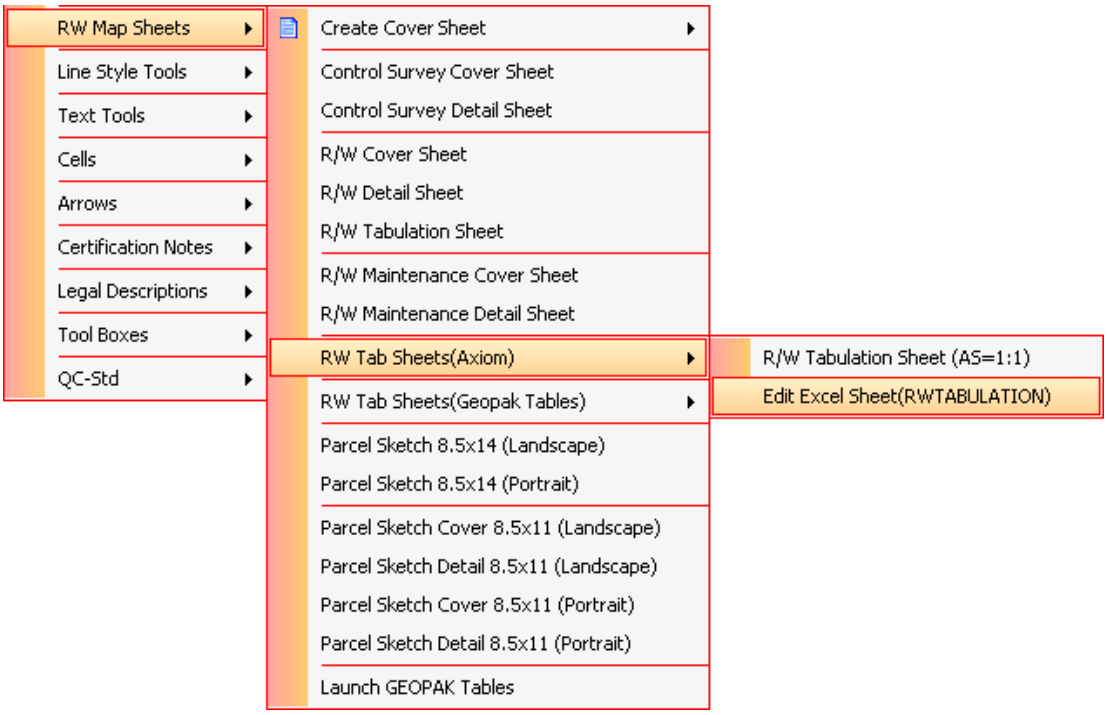
- Place all text using standard MicroStation text tools.
- Create and import an Excel spreadsheet containing the Parcel data using Axiom's Microsoft Office Importer.
- Create and import an Excel spreadsheet containing the Parcel data using GEOPAK's Tables tool.

EDIT EXCEL SHEET (RWTABULATION) (AXIOM)

The user should have previously created a *RWTABXX.DGN* standard design file for tabulation data.

Selecting **Edit Excel Sheet (RWTABULATION)** as shown next will create an Excel spread sheet entitled "*rwtabulation01.xls*" into the user's current dgn directory. This spread sheet is specifically designed to work with Axiom's "Microsoft Office Importer for XM". This program is provided with the FDOT2010 CADD software for in house users. Consultants can contact Axiom, Inc to purchase the program.

 © 2015 FDOT



The Excel spread sheet can be edited for additional data by placing the required information in each column and saving the file. Once data has been saved, the rows that are to be added to the tabulation sheet can be highlighted by standard window operations and then selecting **Edit > Copy**. Excel will display a highlighted border around the selected data.

To place this data onto the tabulation sheet select the **Paste** button. After the Office Importer Paste button has been selected the data will be attached to the dgn cursor with a border displayed surrounding the copied information. The data can be placed on any line within the tabulation sheet by placing a tentative button at the upper left corner of the desired line and then accepted by a data point.

Changes to the existing data can be accomplished by selecting the **Manage** button. The *Manage* tool on the main dialog allows the user to update linked information manually, edit the source document or change the status of the links. After the Manage button has been selected the user will be prompted:

Manage Import Link > Identify element

Click any portion of the part of the linked data that needs to be updated, and the Manage Import Link dialog will display. The **Update** button must be selected for data to be changed. Office Importer will also update linked data that has been changed in the current spread sheet each time the linked design file is opened. For additional information refer to the Office Importer **Help** selection.

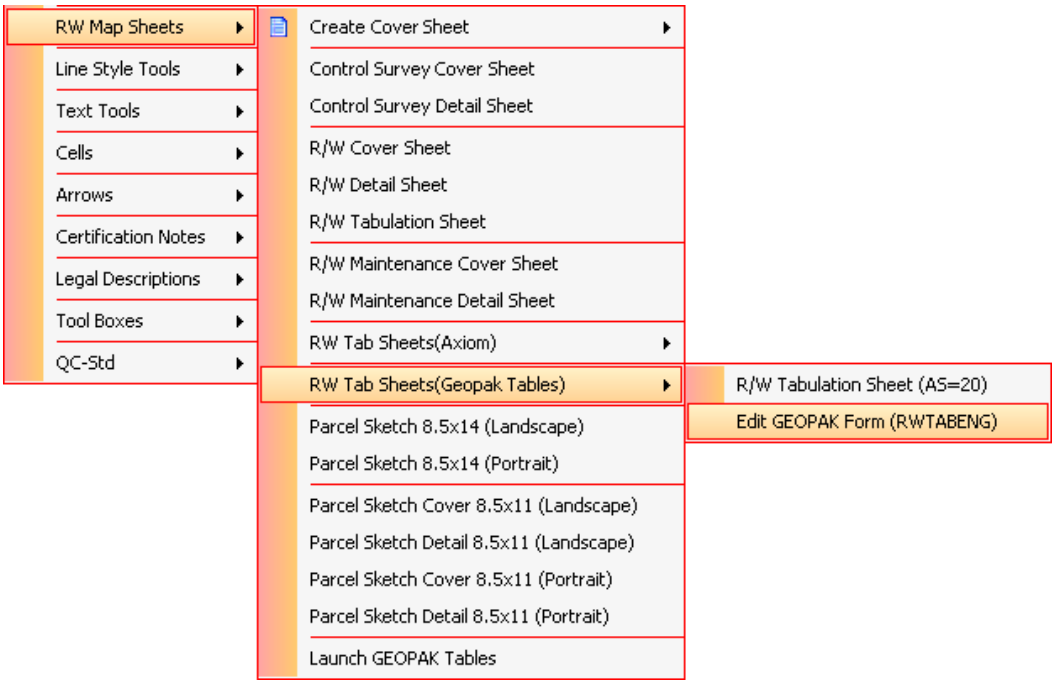
Note If consultant does not have "Office Importer" program it is suggested that the consultant create and provide the district office with a completed "*rwtabulationXX.xls*" Excel spread sheet and the district office can then easily import/link the data into a *RWTABXX.DGN* design file.

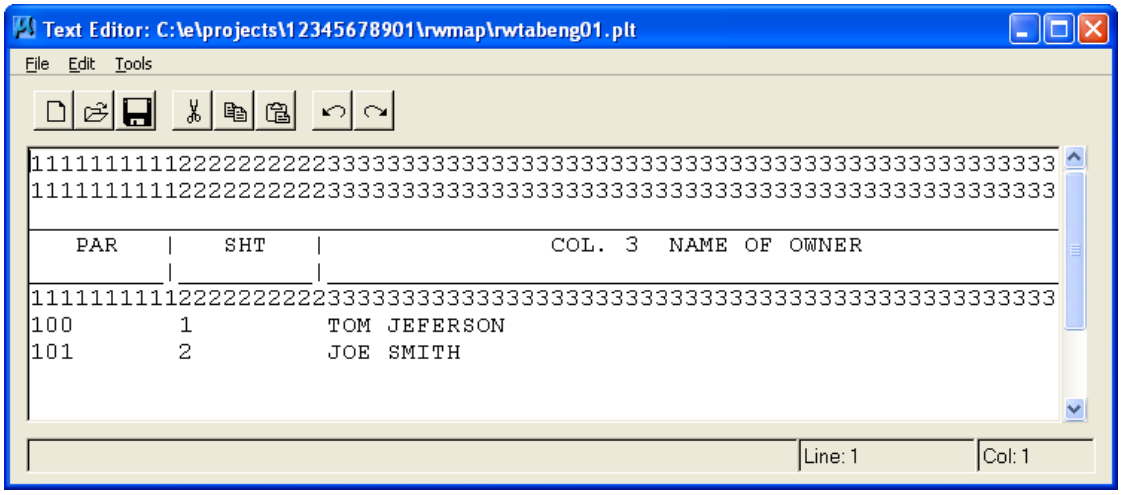
 © 2015 FDOT

EDIT GEOPAK FORM (RWTABENG)

The user should have previously created a *RWTABXX.DGN* standard design file for tabulation data.

Selecting **Edit GEOPAK Form (RWTABENG)** as shown below will create a file entitled "*rwtabeng01.plt*" and open that file into the MicroStation Text Editor window.



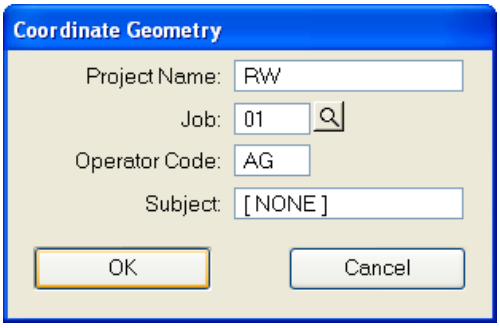


This PTL file is specifically designed to work with the MicroStation Text Editor. Once the desired data has been entered into the MicroStation Text Editor the user can then select **Tools** > **Import Text** to attach the text data to the MicroStation cursor for placement into the RWTAB sheet cell.

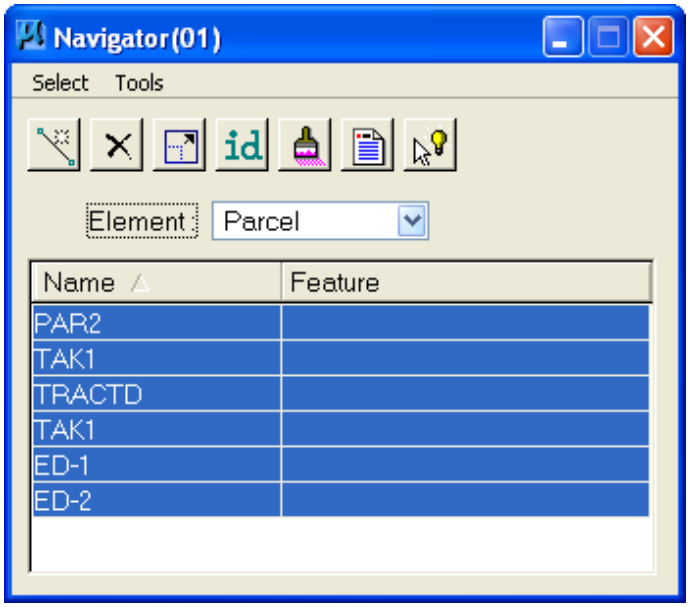
Exercise 17.1 The RW Tab Sheet

➢ ***In this exercise the user will learn how to enter the RW Tab Sheet.***

1. Open MicroStation using the FDOT2010 XM icon on the Desktop. As an alternative, launch MicroStation from the FDOT2010 folder on the Windows Start menu.
2. Open the C:\E\Projects\12345678901\rwmap*rwtab12.dgn* file. The RWTAB sheet cell as well as some Parcel information has already been placed in the file.
3. From the MicroStation menu, select **Applications > GEOPAK ROAD > Geometry > Coordinate Geometry**.
4. If prompted, enter a *Project Name*, *Job***,** and *Operator Code* as shown and select **OK.**

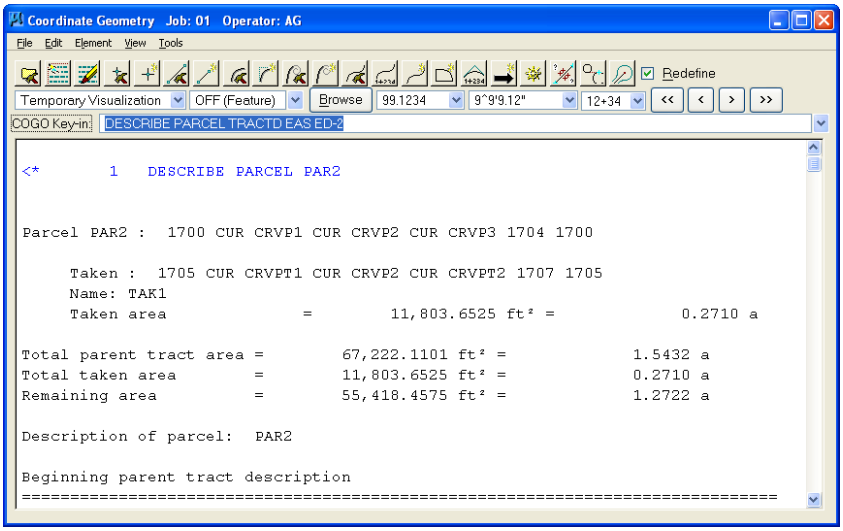


5. From the Coordinate Geometry window, select **Tools > Navigator** to open the Navigator dialog. Set the *Element* type to **Parcel** and select all *Parcels* as shown.

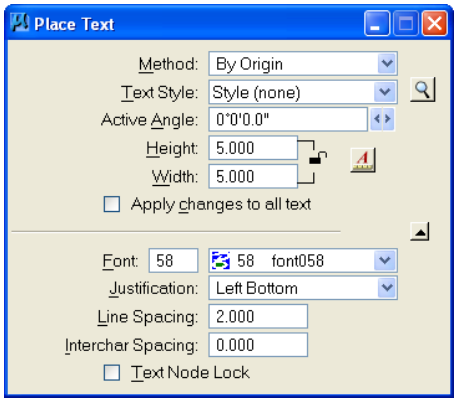


 © 2015 FDOT

6. Click the **Print/Describe Element** icon to place the *Description* for all Parcels into the Coordinate Geometry window. The Coordinate Geometry window will display similar to the one shown.



7. Using the *Text Settings* shown and the *Parcel Descriptions* shown in the Coordinate Geometry window, enter the fields in the **RWTAB** *sheet cell*.



8. When completed, the TAB sheet should match the 2 screen shots shown below. The TAB sheet was split into 2 screen shots for readability.

PARCEL NO.	SHEET NO.	NAME
104	2	FIRST COAST ENERGY, L.L.P.
105	3	ROYAL PETROLEUM, INC.

AREA TAKEN	REMAINDERS		COMMENTS
	LEFT	RIGHT	
0.271 AC	1.272 AC		Parcel PAR2 In GPK File
147 S.F.	0.558 AC		Parcel TRACTD In GPK File

 © 2015 FDOT

18 RIGHT OF WAY QA/QC TOOLS

OBJECTIVES

This chapter will review the Quality Assurance/Quality Control (QA/QC) tools available to the FDOT Right-of-Way Mapper from the Right of Way FDOT Menu. Items covered will include:

- Standard Right-of-Way Symbology
- QC Inspector
- Activating QC Tools
  - QC Check
  - QC Quick
  - QC Batch Report
  - QC Stop

INTRODUCTION

QA/QC tools provide the user with the ability to complete a QC review of all mapping project types produced by Right of Way Mapping. This is accomplished through the use of QC tools and their related Standard Rules. These Standard Rules contain the standard symbology requirements for elements placed in any Right of Way design file project. For Right of Way Mapping the Standard Rule name is RWENG10.

STANDARD RW SYMBOLOGY

The primary purpose of the QA/QC tools is to ensure compliance with the *RW Mapping CADD Symbology* when creating Right-of-Way maps. For the most up-to-date *RW Mapping CADD Symbology* information, please download the latest copy of Chapter 9 of the CADD Production Criteria Handbook (CPCH) from:

http://www.dot.state.fl.us/ecso/downloads/publications/CriteriaHandBook/

FDOT QC SOFTWARE

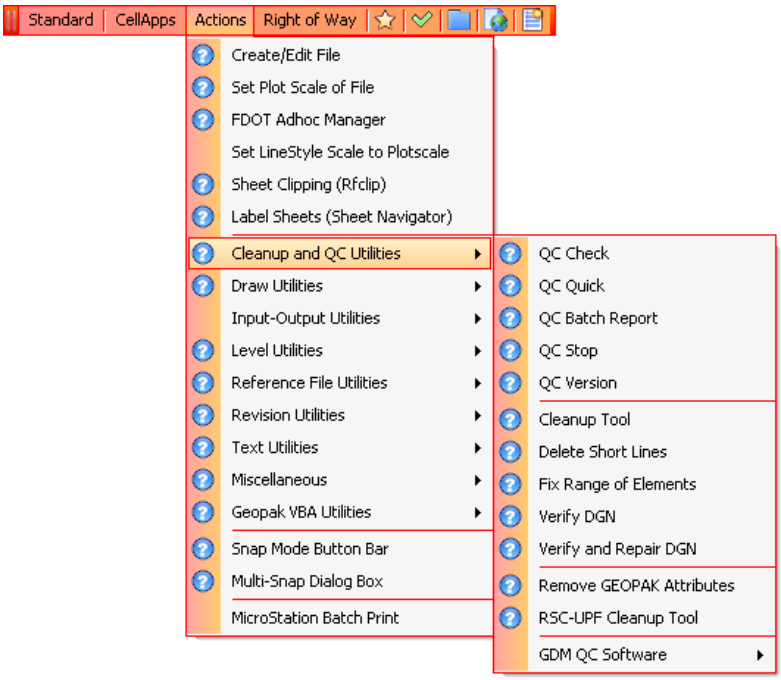
Florida Department of Transportation (FDOT) provides a Quality Control (QC) software package named QC Inspector that contains tools used to check, correct and report on the compliancy of elements within any design file against the FDOT Computer Aided Drafting Design (CADD) Standards. Aside from any corrective functionality in relation to elements, QC Inspector tools do not write any additional information into the design file. All checking and reporting is performed in real time and results recorded into reporting documents that are saved to the current active project.

QC Inspector provides four (4) forms of QC Analysis that will be described in this chapter.

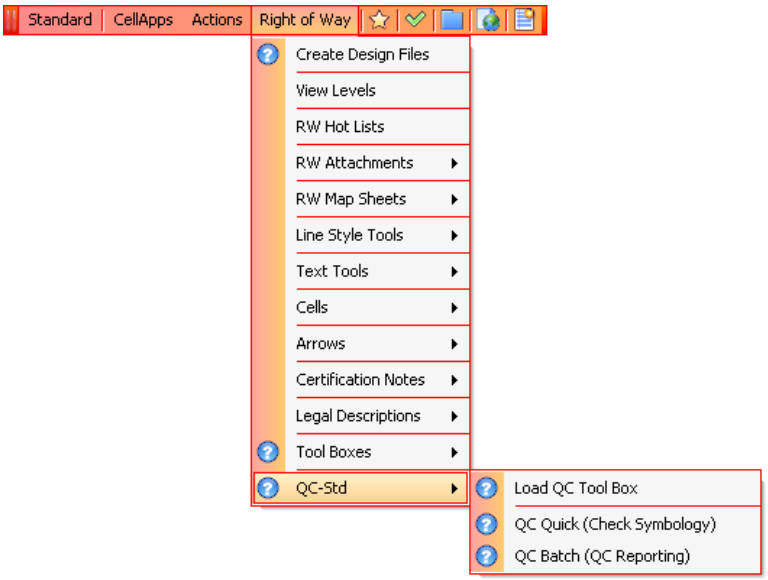
1. Compliance checking during design process and upon file closing.
2. Interactive Checking, Reporting and Correcting of invalid standards in the active design file.
3. Summary QC Batch Report
4. Detailed QC Batch Report

ACCESSING QC TOOLS

The Standard FDOT Menu provides QC Tools under the common option: **Actions > Cleanup and QC Utilities** for all FDOT workspaces as shown below. Help icons located next to each menu option provide detailed assistance in the application of these tools. The user needs only to click on the icon to open.



The **Right of Way FDOT Menu** offers R/W Mapping a QC Toolbox and quick links of those same QC Inspector tools through the **QC-Std** menu option as shown below. These are discussed in more detail in the following sections.

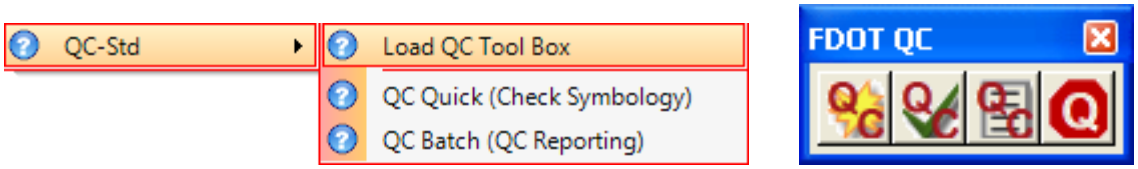


 © 2015 FDOT

LOAD QC TOOL BOX

The Right of Way FDOT QC toolbox provides the user with the ability to complete a Quality Control review of all mapping project types produced by Right of Way Mapping. This is accomplished through the use of four QC tools as described below and the FDOT Standard Rule for Right of Way Mapping named *rweng10*. The Standard Rules are delivered with the FDOT CADD Software and contain the standard level/symbology requirements for elements placed in a Right of Way design file project. These Standard Rules cannot be changed or modified by the user. The QC tools process each element in a design file comparing them against the FDOT Standard Right of Way Rule.

From the Right of Way FDOT Menu, select **QC-Std > Load QC Tool Box** to load the Right of Way FDOT QC toolbox as shown below. The FDOT QC toolbox can be docked just like any other MicroStation toolbox.



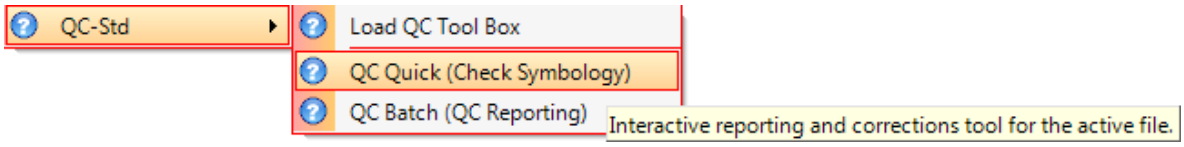
Icon	Command Description
	Activates QC Inspector **QC Quick** tool.
	Activates the QC Inspector **QC Check** tool.
	Activates the QC Inspector **QC Batch Report** tool.
	QC Inspector **QC Stop** tool disables the hidden *QC Overwatch* from automatically checking the elements upon closing of the design file.

QC QUICK (CHECK SYMBOLOGY)

The Right of Way FDOT Menu offers a quick link to the QC Inspector **QC Quick** tool. It is a very powerful QA/QC tool that allows the user to check all graphical elements of a drawings against the FDOT Standard Rules and apply corrective measures as the designs are created, but can only be used on the active design file. QC Quick will identify two types of errors for any given element.

- Level Errors – Invalid Levels for the active design file type.
- Symbology Errors – Invalid Symbology settings other than the standard *ByLevel* settings

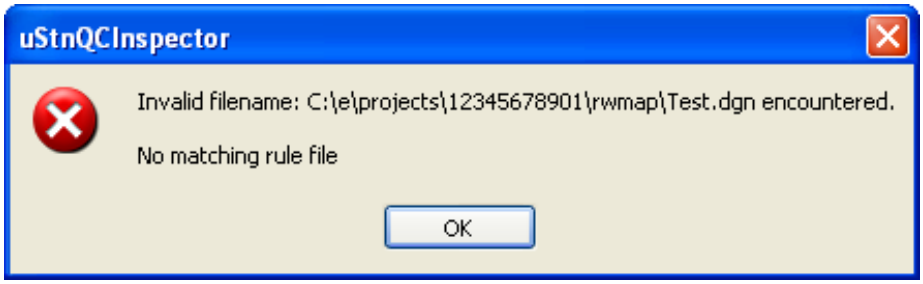
From the Right of Way FDOT Menu, select **QC-Std > QC Quick (Check Symbology)** to load the QC Inspector **QC Quick** tool as shown below.



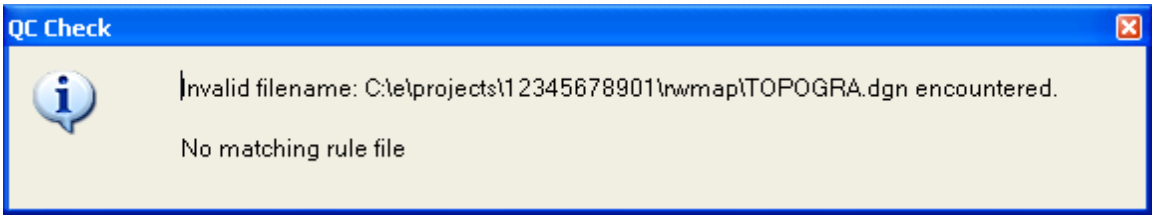
 © 2015 FDOT

- **Non-Standard File Name**

If a non-standard File Name is encountered upon accessing QC Quick, the following Alert will display and the QC Process terminates. The File Name must be corrected before any QC processes can be run on the file. These files can be included in any QC Reports, but will be identified as an Invalid File Name with 0% Compliancy.

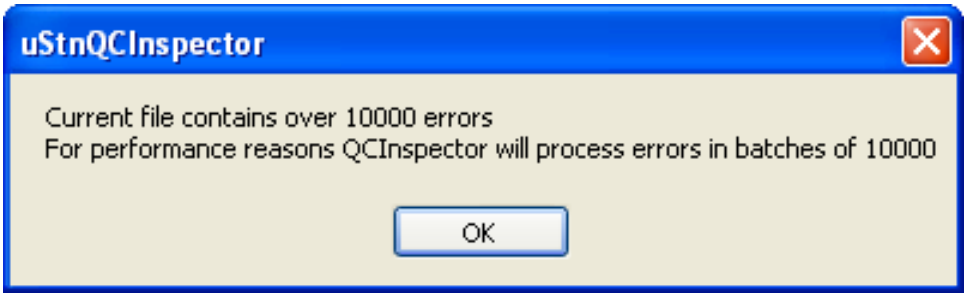


The following displays in the automated QC Inspector **QC Check** compliancy box when initiated for non-standard files:



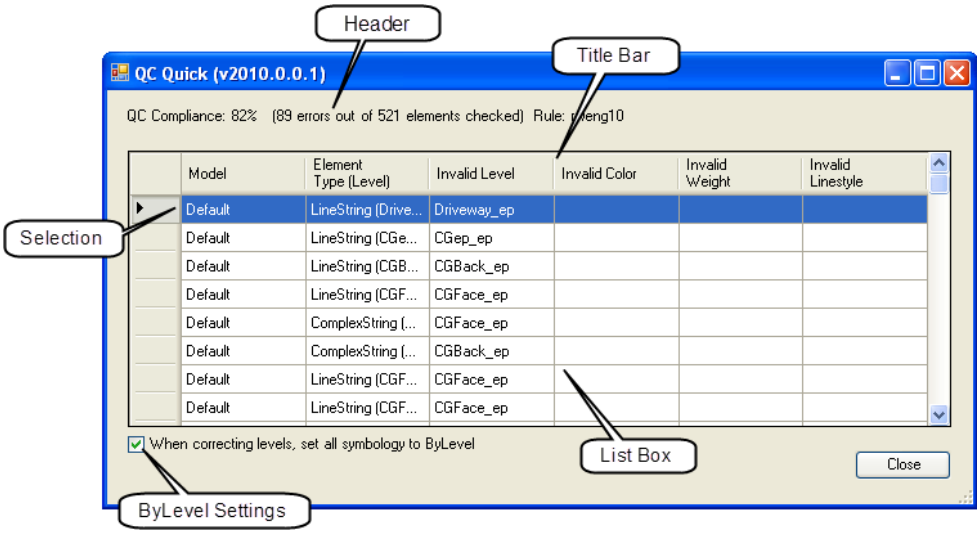
- **Process Limitation**

The QC Inspector **QC Quick** tool has a processing limitation and will only process 10,000 items in one correction session. The following alert box will display if this situation should occur. Once the correction session is complete the user should repeat the QC process until all incidences are handled.



*WORKING WITH **QC QUICK***

1. Upon accessing QC Quick**,** the active design file is analyzed for all invalid Standard information and an interactive report is created for the user to review and make corrections.



- **Header** QC Compliance Percentage, Errors –vs– Total Element Count and Standard Rule used to check elements. The Compliance Percentage and Error Count will update as corrections are made.
- **Title Bar** Model, Element Type with Level, Invalid Level, Invalid Symbology (Color, Weight, Linestyle). Each title has sorting (ascending or descending) the listed invalid items by single clicking any of the titles.
- **Selection Column** Double-clicking in any box in the first column of the List Box zooms the display into the specific highlighted error.
- **List Box** Only invalid information will display in the List Box. There are only two types of errors: Invalid Level or Invalid Symbology.

Note FDOT classifies each Standard Level as Critical or Non-Critical in the Standard Rules as outlined in the CPCH. A Critical Level value determines that both Level and "ByLevel" Symbology are set upon correction. A Non-critical Level value determines that only the Level is set upon correction.

  - *Invalid Level* If an invalid Level is found, only the Invalid Level will display on the QC Quick report with no symbology entries.

Note Only the 'Fix Level' or 'Create Exceptions' options can be used for correction on this error type.

  - *Invalid Symbology* If a valid Critical Level is found with symbology (Color, Style or Weight) set to anything other than By-Level, only the Invalid Symoblogy settings will display on the QC Quick report.

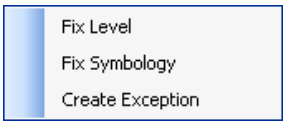
Note Only the 'Fix Symbology' or 'Create Exceptions' options can be used for correction on this error type.

- **When correcting levels, set all symbology to ByLevel** Checkbox is automatically set to be enabled. If checked, QC Quick will set all Symbology (Color**,** Style & Weight) to "By-Level" for any valid Critical or Non-Critical Level selected for correction.

  If un-checked, QC Quick will set only the Symbology for Critical Level corrections to "By-level". For Non-Critical Level corrections, QC Quick will set only set the valid Level selection.

 © 2015 FDOT

2. The user reviews and sorts the invalid list and determines the corrections needed. Each error can be inspected by double-clicking in the first column next to any line item. The row will highlight and the view window will zoom into the highlighted error for review.
3. Select/highlight the items for correction using any of the following methods:
    - Click any single line item to highlight ready for correction.
    - Place and hold the cursor on any given line item, then drag up or down to highlight consecutive multiple entries to form a selection group ready for correction.
    - Using the Shift key, select a starting line item, hold the Shift key down and then click on another line item. Those line items and all consecutive items in between will be highlighted to form a selection group ready for correction.
    - Hold the Ctrl key down and randomly click on any line item to highlight and form a selection group ready for correction.
4. After a selection is made, right-click on the QC Quick **List Box** to display a popup menu of correction options. Only the highlighted items will be corrected.

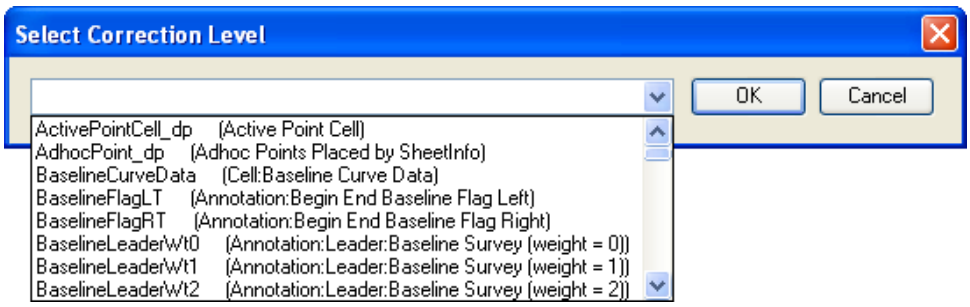


- **Fix Level** command changes the Level of the element to the selected valid Level. Only valid Levels will be displayed to the user for selection.

  If a Critical Level is selected, all Symbology of the element will be set to "ByLevel" to match the Critical Level value.

  If a Non-Critical Level is selected, only the Level is corrected, unless the user has elected to have the Symbology changed by checking the "When correcting levels, set all symbology to ByLevel" box.

Note If 'Fix Symbology' is selected to correct an invalid level entry, no processing occurs.



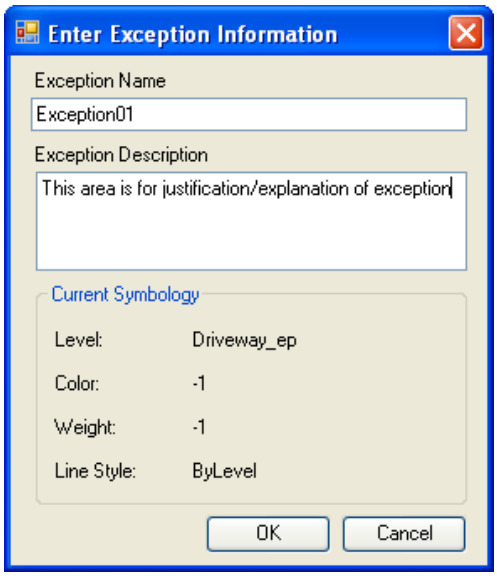
- **Fix Symbology** command will set Non-ByLevel symbology to "ByLevel" for Critical Levels. No additional window opens and the invalid Symbology is automatically set to "ByLevel".

Note If 'Fix Level' is selected to correct invalid symbology, no processing occurs.

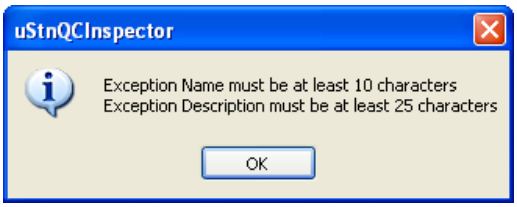
- **Create Exception** command creates new exceptions for the active Standard Rule, not for the specific active design file. The CPCH states that a maximum of ten (10) exceptions are allowed per Standard Rule per FDOT Project. If more exceptions are listed in the exception file, only the first 10 apply with all others ignored. All duplicates are ignored and not included in the total exception allowance.

Exceptions are stored in a comma separated value (CSV) file located in the "eng_data" folder of the active design file being checked. The Exception filename is automatically created in the form of "XXXX-exception.csv", where XXXX represents the name of the Standard Rule for which an exception is being created. This file will be appended with each subsequent exception created for this Standard Rule.

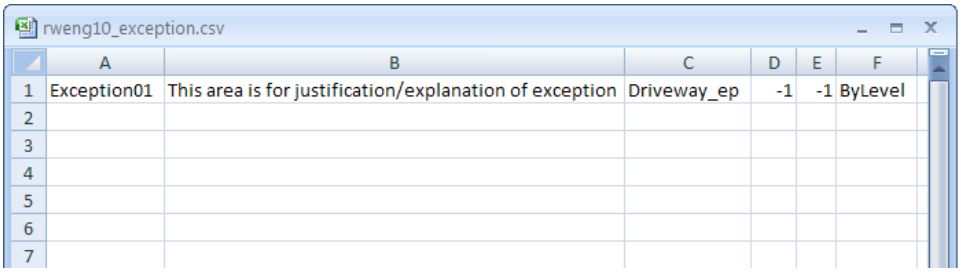
Note If the "eng data" folder does not exist, the application will attempt to create the folder. If the folder cannot be created, the exception will NOT be created.



The information listed above is included in the creation of the exception. The Exception Name and Description have minimum character requirements. The following alert will display if each entry does not adhered to this requirement.



Once completed, the application saves the XXXX_exception.csv file for future use/review by the user.



5. As each *invalid line item* is corrected (or an exception created), QC Quick removes them automatically from the List Box and updates the header information. The QC Quick window closes upon completion of all corrections.

 © 2015 FDOT

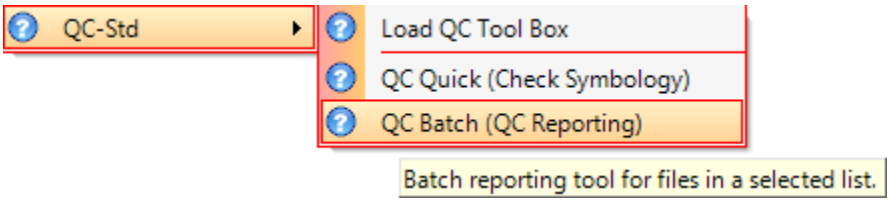
QC BATCH (QC REPORTING)

The Right of Way FDOT Menu offers a quick link to the QC Inspector **QC Batch Report** tool. It is a user initiated tool that runs a real time batch compliancy check on all elements within all models of a selection set of design files against the applicable FDOT Standard Rule and then creates a *QC Summary Report* required for the Electronic Delivery of all FDOT Project submittals. An optional *QC Detailed Report* is also available for the user to produce the details of the errors within the *QC Summary Report*.

By default, **QC Batch Report** automatically creates and stores the QC report(s) in the **\eng_data** sub-folder located under the selected Discipline folder containing the design files. If the **\eng_data** sub-folder does not exist, the report will be created directly in the selected project root folder.

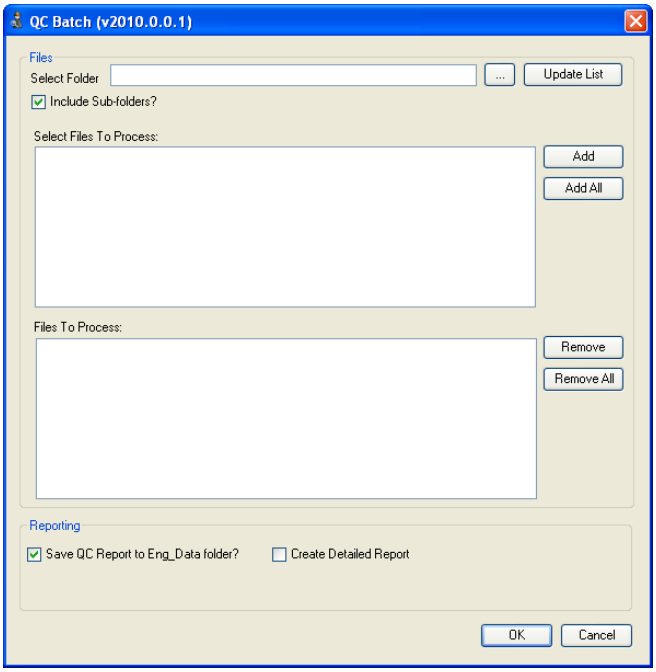
By default, the required *QC Summary Report* is always created and automatically saved as *QCInspectorReport.txt*. The optional *QC Detailed Report*, when selected, is saved as *QCInspectorReport.txt.html* The user does have the option to deselect the auto-option to manually enter a QC report name and select an alternate location to store the QC report(s).

From the Right of Way FDOT Menu, select **QC-Std > QC Quick (Check Symbology)** to load the QC Inspector **QC Quick** tool as shown below.



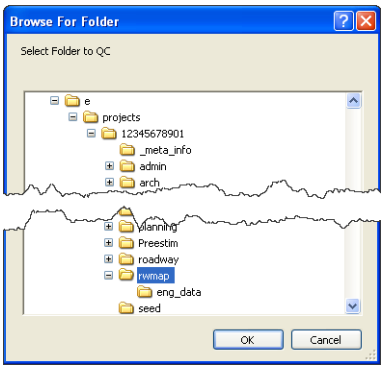
WORKING WITH QC BATCH REPORT

1. Upon accessing the *QC Batch Report*, the user must decide on the following:
   - ✓ What selection group of design files to include in the report?
   - ✓ Create additional QC Detailed Report?
   - ✓ Accept the auto-naming and storage provided or select an alternative?



© 2015 FDOT

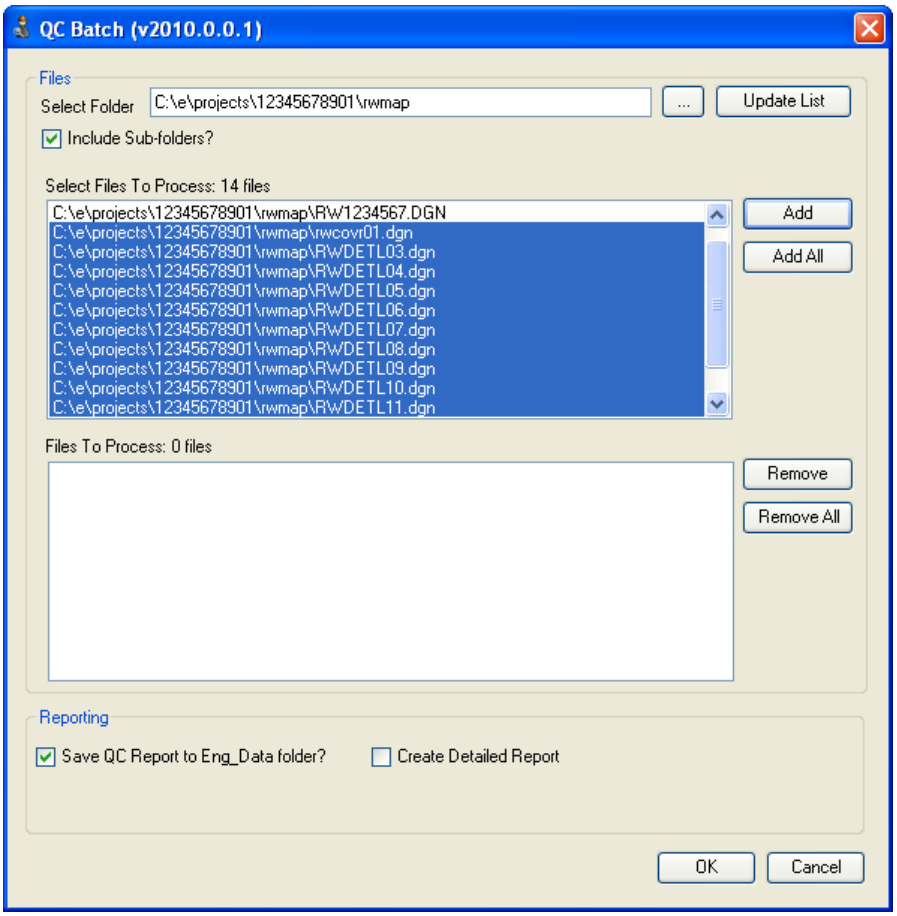
2. Enter the *Select Folder* field by clicking the [...] button and navigating to the correct project folder where design files reside, select the location and then click **OK.** The "*Select Files To Process*" list box will populate.



Note The option to "Include Sub-folders?" can be unchecked and changes to the folder selection can be updated by clicking the [Update List] **Update List** button.

3. **Select Files To Process** by selecting files individually and then clicking [Add] <OR> by clicking the [Add All] button to include all files. "*Files To Process*" list box will populate.

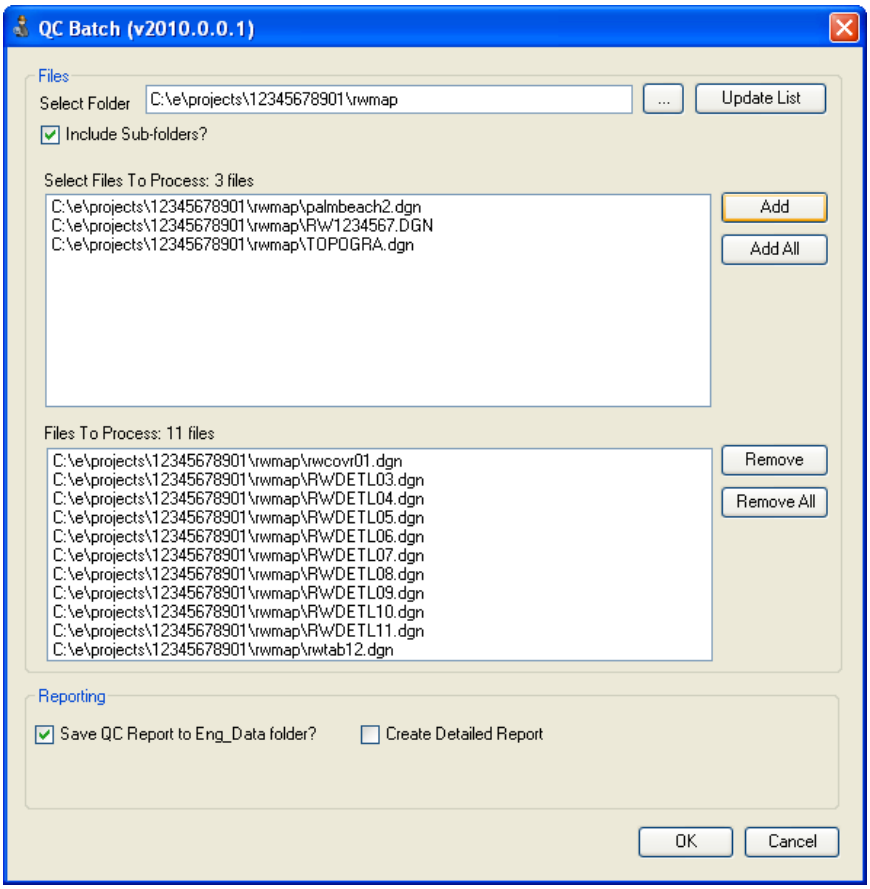
Note As files are selected and added, they are removed from the "Select Files To Process" box and added to the "Files to Process" box.



4. Repeat steps 2 and 3 until all required design files are included in the Files To Process selection group for the QC report. Design files from multiple directory folders can be select and added to the final selection group by choosing one folder at a time, selecting the files and then moving to the next folder.

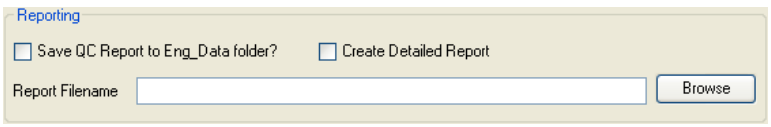
 © 2015 FDOT

6. Review the Files To Process listing, highlighting and using the Remove or Remove All buttons as needed to refine final selection group to process.



7. Review *Reporting* from the following options:

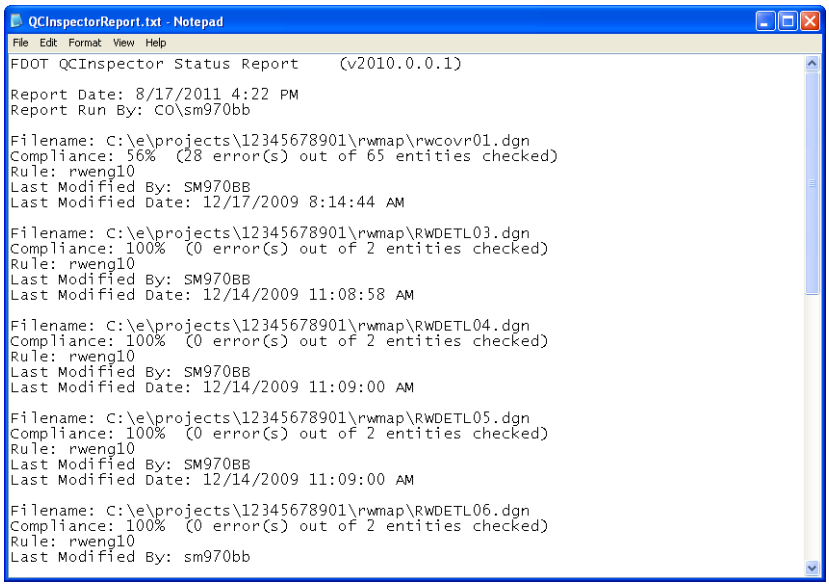
- Accept the default selection, **Save QC Report to Eng_Data folder?**, as shown above. This will automatically produce the required *QC Summary Report* and saving it in the eng_data subfolder of the root folder in the "Select Folder" field, in this case C:\e\Projects\21053125201\roadway\eng_data. If the eng_data folder does not exist, the report will be saved to that root folder, in this case C:\e\Projects\21053125201\roadway.
- Accept the default as shown above and check the **Create Detailed Report** checkbox. This will automatically produce the required *QC Summary Report* and the *QC Detailed Report*, saving them both as stated in option "a".
- Uncheck **Save QC Report to Eng_Data folder?** and manually enter *QC Report Filename* and use Browse to navigate to the desired location to save the QC report.



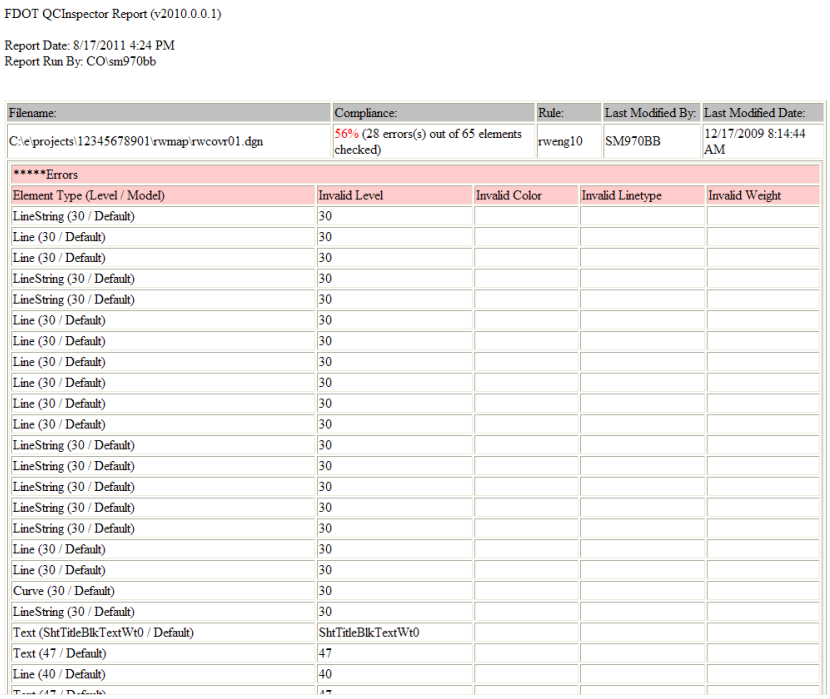
8. Uncheck **Save QC Report to Eng_Data folder?** Check **Create Detail Report** and then manually enter QC Report Filename and use Browse to navigate to the desired location to save the QC reports. Both QC reports will be saved under the same name with different file extensions.

9. Select **OK** to run *QC Batch Report*. The following (sample) report(s) will display for review by the user. These reports can be pulled at any time during the design process as status reports, as well as for final reporting.

   - QC Summary Reports will also include the following, if the case applies:
     - ✓ Any *Exceptions* created for the Standard Rule.
     - ✓ If file has *No Graphical Elements Found*.
     - ✓ If there is an *Invalid Filename*.
     - ✓ If file cannot be opened, either corrupt or access denied.



   - QC Detailed Report (Optional)



FDOT QCInspector Report (v2010.0.0.1)

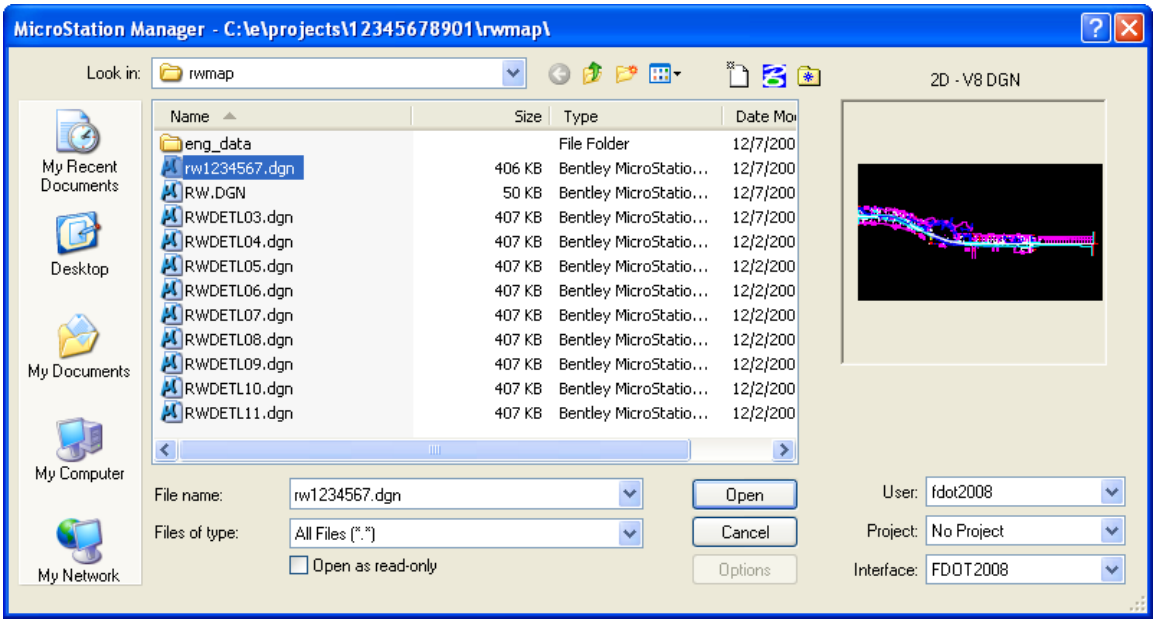
Report Date: 8/17/2011 4:24 PM
Report Run By: CO\sm970bb

Filename:	Compliance:	Rule:	Last Modified By:	Last Modified Date:
C:\e\projects\12345678901\rwmap\rwcovr01.dgn	56% (28 errors(s) out of 65 elements checked)	rweng10	SM970BB	12/17/2009 8:14:44 AM

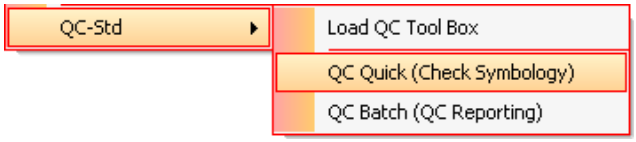
*****Errors				
Element Type (Level / Model)	Invalid Level	Invalid Color	Invalid Linetype	Invalid Weight
LineString (30 / Default)	30			
Line (30 / Default)	30			
Line (30 / Default)	30			
LineString (30 / Default)	30			
LineString (30 / Default)	30			
Line (30 / Default)	30			
Line (30 / Default)	30			
Line (30 / Default)	30			
Line (30 / Default)	30			
Line (30 / Default)	30			
Line (30 / Default)	30			
LineString (30 / Default)	30			
LineString (30 / Default)	30			
LineString (30 / Default)	30			
LineString (30 / Default)	30			
LineString (30 / Default)	30			
Line (30 / Default)	30			
Line (30 / Default)	30			
Curve (30 / Default)	30			
LineString (30 / Default)	30			
Text (ShtTitleBlkTextWt0 / Default)	ShtTitleBlkTextWt0			
Text (47 / Default)	47			
Line (40 / Default)	40			

Exercise 18.1 Using RW QA/QC Tools

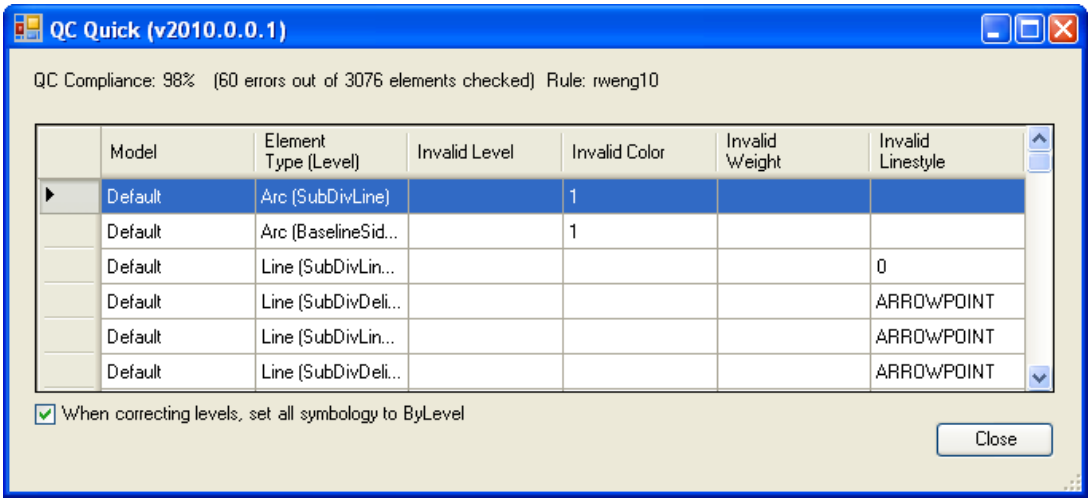
1. Open the MicroStation file C:\E\Projects\12345678901\rwmap*rw1234567.dgn.*



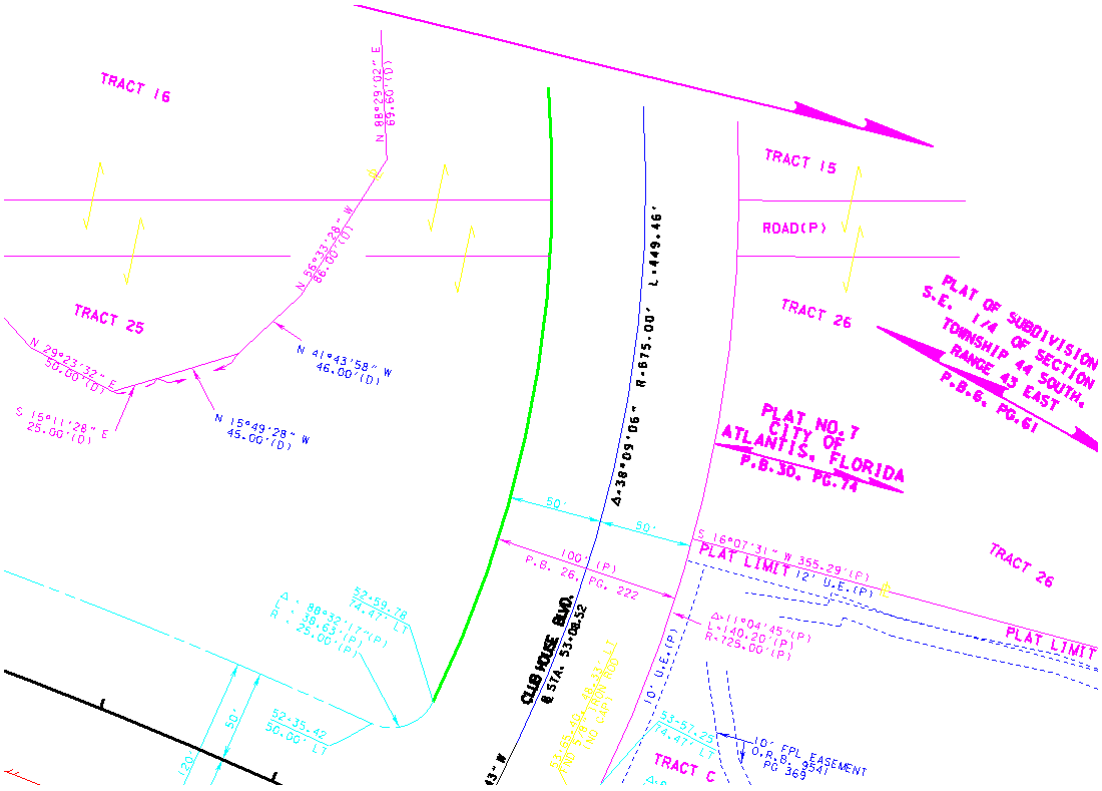
2. Select the **QC-Std** > **QC Quick (Check Symbology)** from the Right of Way FDOT Menu.



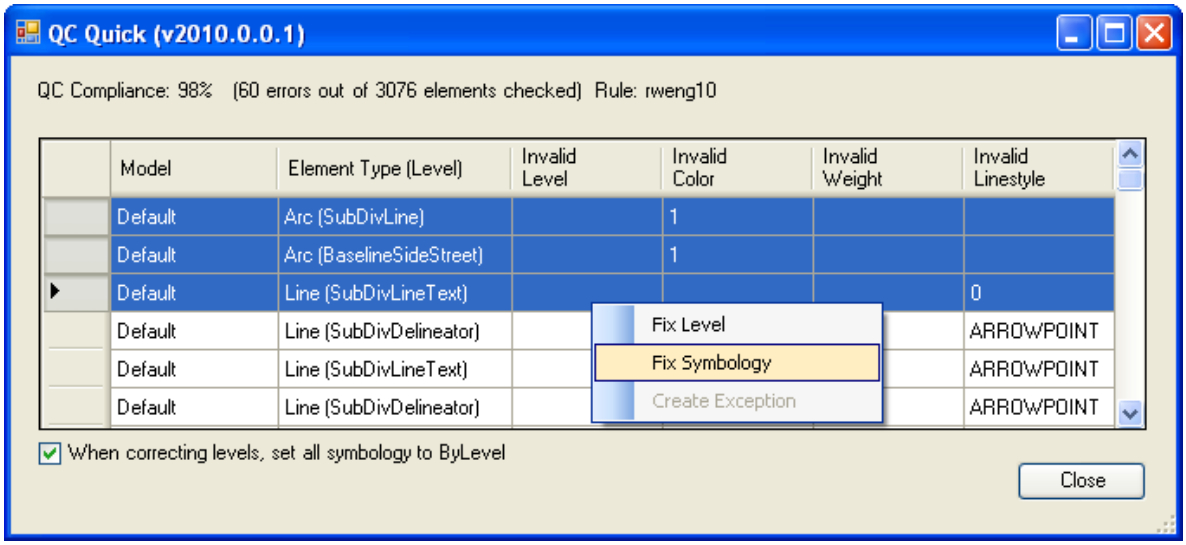
3. The QC Quick dialog will display. Select the first *Invalid* entry. Double click on the first *Invalid* entry to view in MicroStation as shown.



4. For the first *Invalid entry*, the *Subdivision Section Line* is on an invalid color. The incorrect *Subdivision Section Line* will be highlighted in green in the MicroStation view.

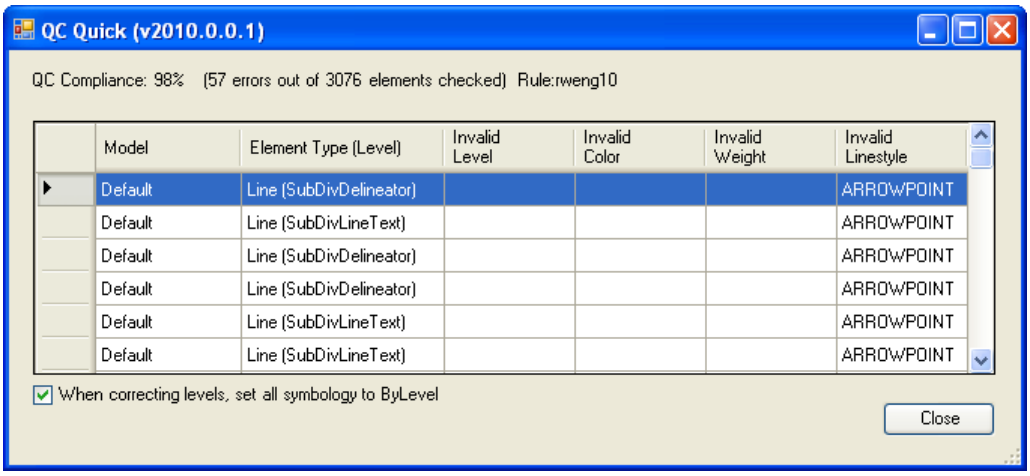


5. Review the next 2 *Invalid entries*,highlight the **first 3 entries** and right-click on one of the entries to open the correction popup menu. Select the **Fix Symbology** option. QC Quick will change the element to the correct symbology defined in the *RWENG10 Standard Rule*.

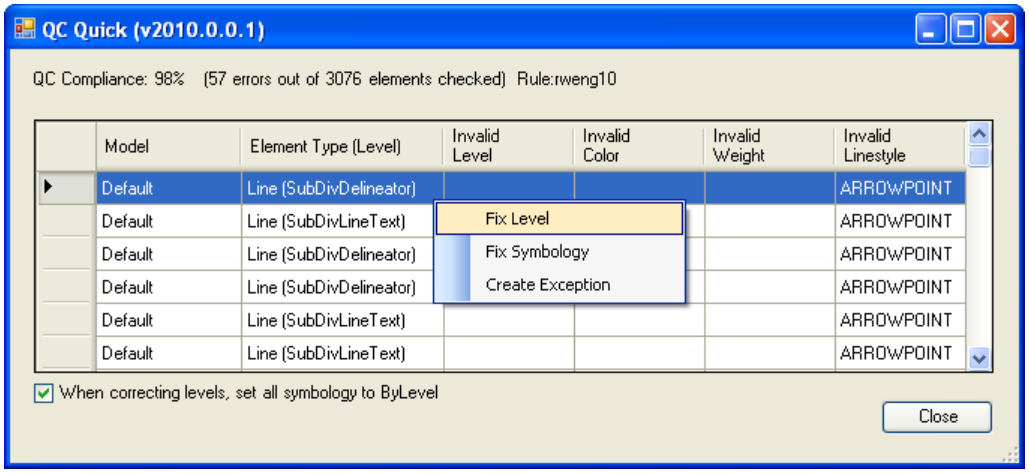


 © 2015 FDOT

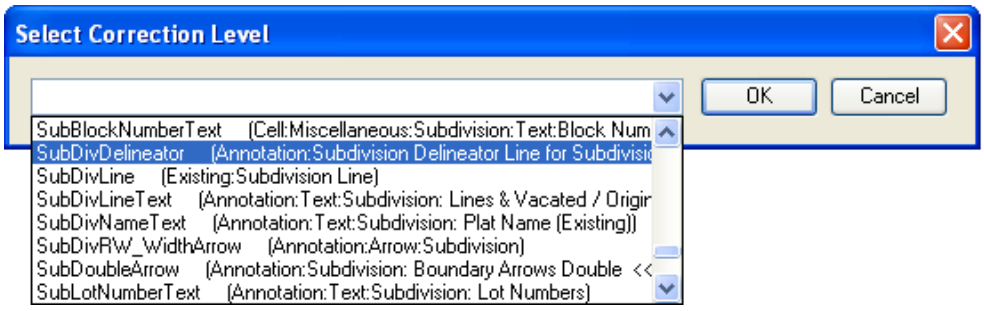
6. QC Quick will remove those entries and then automatically highlight the next Invalid entry after the correction takes place.



7. Double click on the highlighted entry to view in MicroStation. Right-click on the highlighted entry and the select **Fix Level** from the correction popup menu.



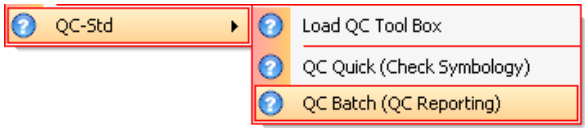
8. Using the Select Correct Level *dropdown arrow* to display the list of Bylevels, select the correct **Bylevel** and then click the OK **OK** button.



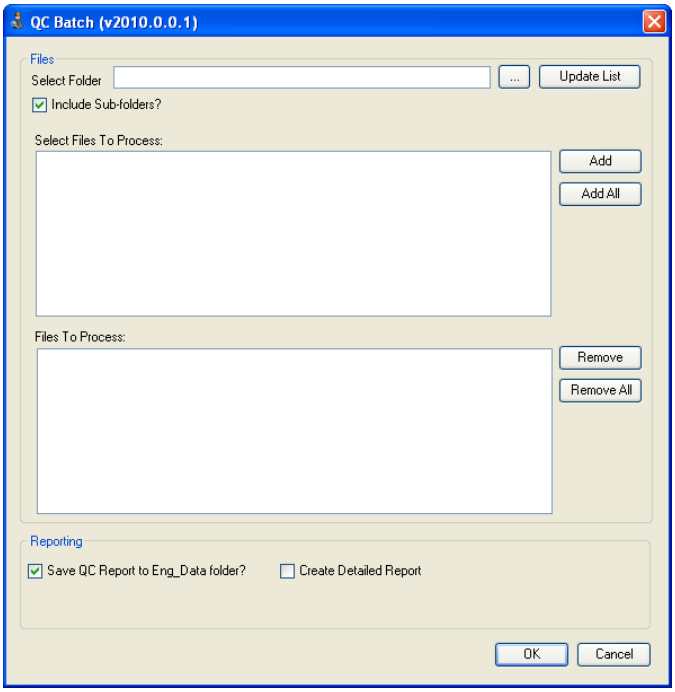
9. Review the remaining entries and use the same steps to correct. Note that multiple entries can be highlighted for the same correction. If unsure, ask the instructor. Exit MicroStation when finished.

Exercise 18.2 Using RW QA/QC Tools

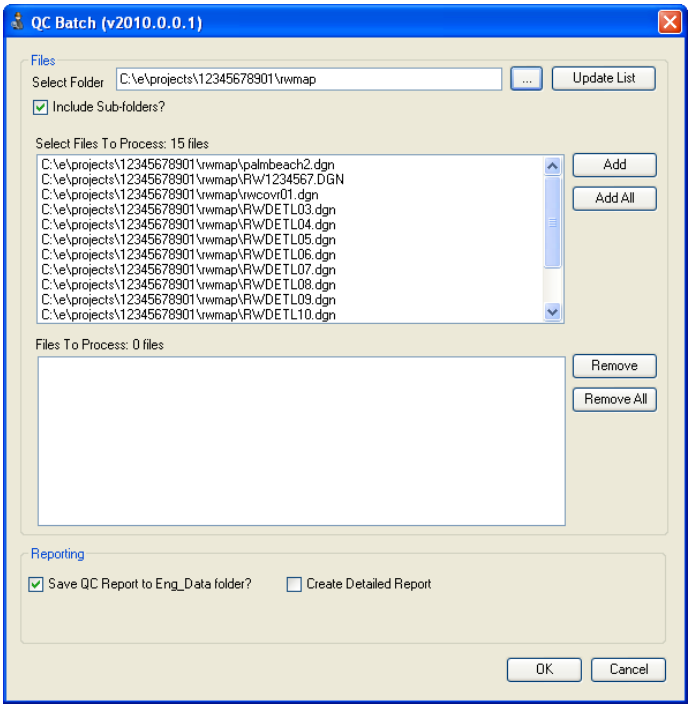
1. From the Right of Way FDOT Menu, select **QC-Std > QC Batch (QC Reporting)** as shown.



2. This will display the QC Batch reporting dialog as shown.

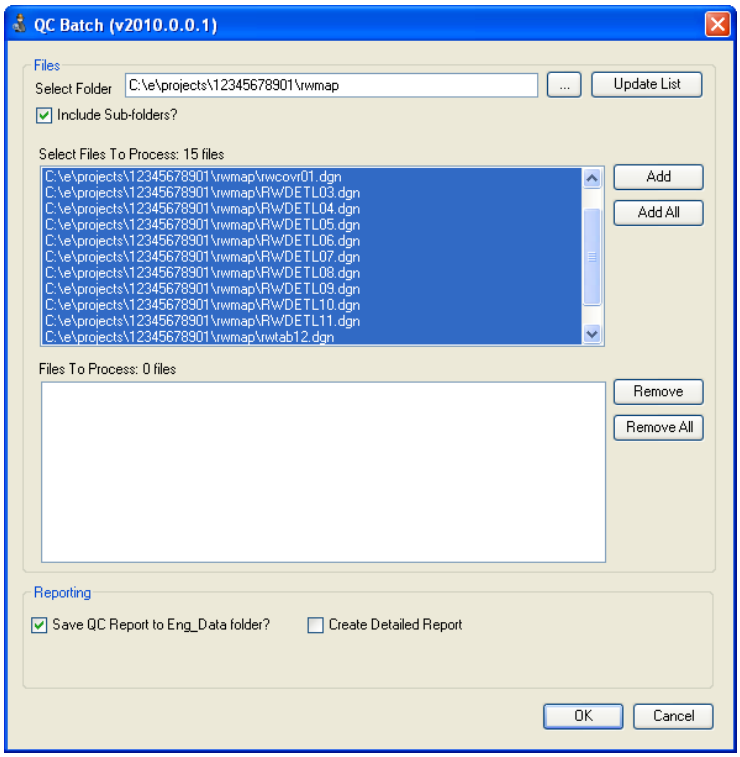


3. Click [...] *browse* button to navigate the *12345678901* project folder, select the **rwmap** sub-folder and click on the [OK] **OK** button.

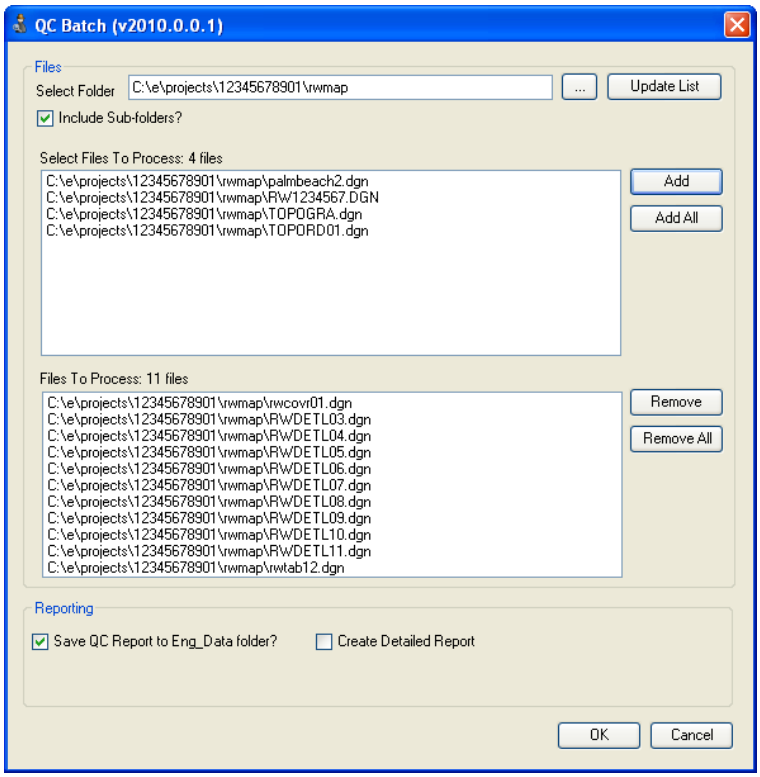


 © 2015 FDOT

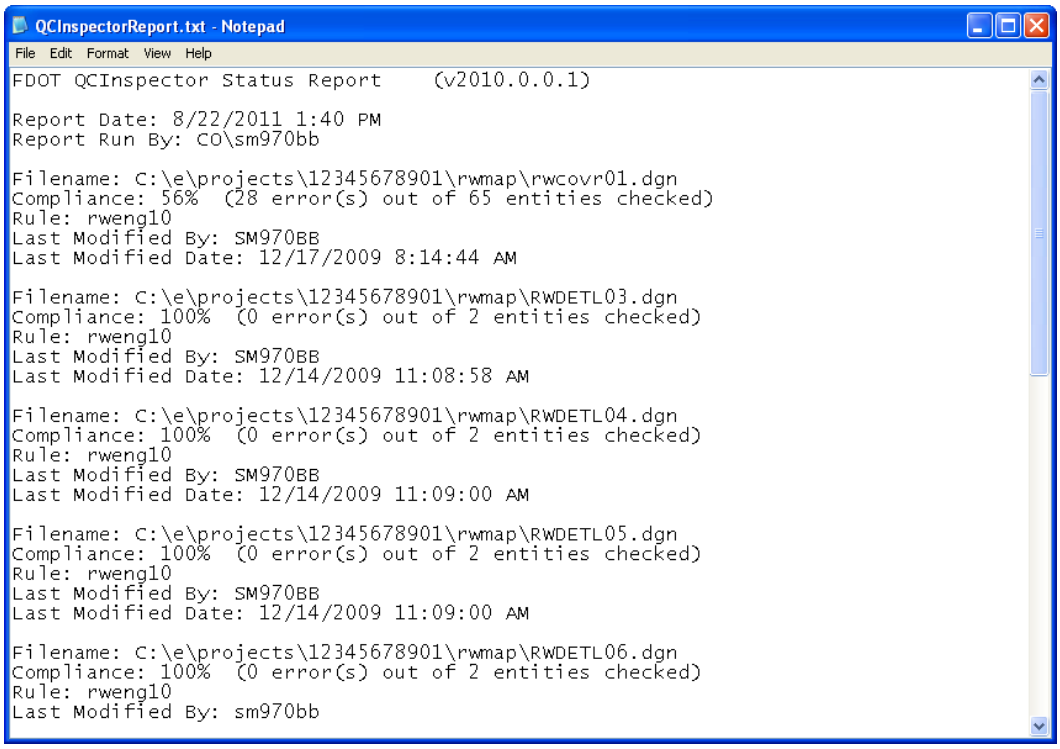
4. From the QC Batch dialog, *Select Files To Process* as shown below.



5. Click the Add **Add** button to add the selection to the *Files To Process* window as shown below.



6. Ensure that the **Save QC Report to Eng_Data** is checked and press the OK **OK** button. A report named QCInpectorReport.txt will be added to the Eng_Data folder and will open for review.



19 RIGHT OF WAY PLOT FILES

OBJECTIVES

This chapter will cover a variety of ways to generate and submit plot files. Items covered include:

- MicroStation Plotting
- FDOT PLT Files
- Postscript Printing
- Pen Tables
- Batch Plot (MSBP)

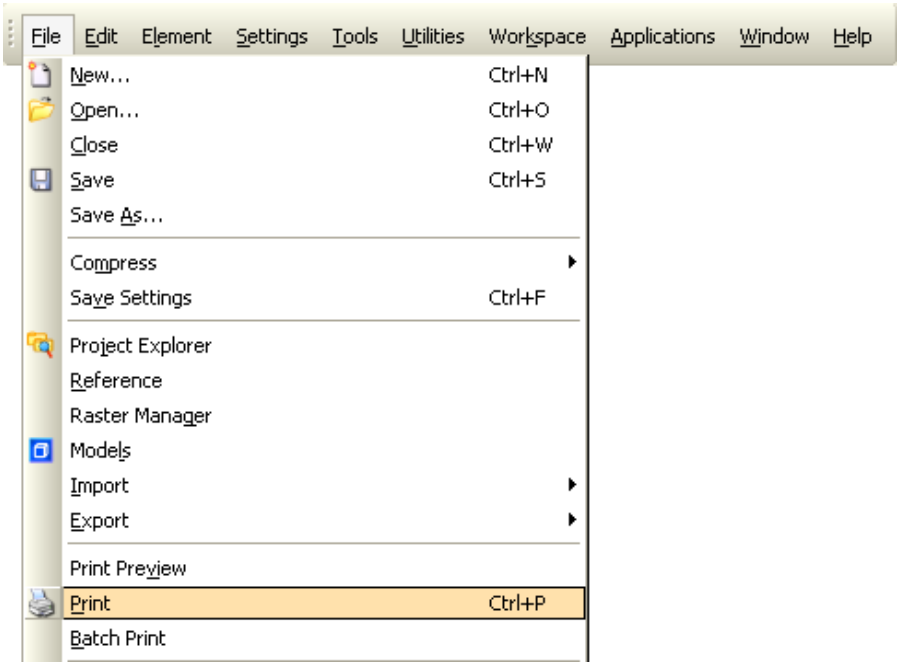
INTRODUCTION

MicroStation printing provides numerous ways for the FDOT Right-of-Way Mapper to set up, modify, create and finally print sheets and sheet sets. In addition to the tools MicroStation provides, the FDOT Menu brings FDOT specific print drivers and pen tables for printing individual sheets or plot sets. MicroStation allows the user to print to a hard copy or a file.

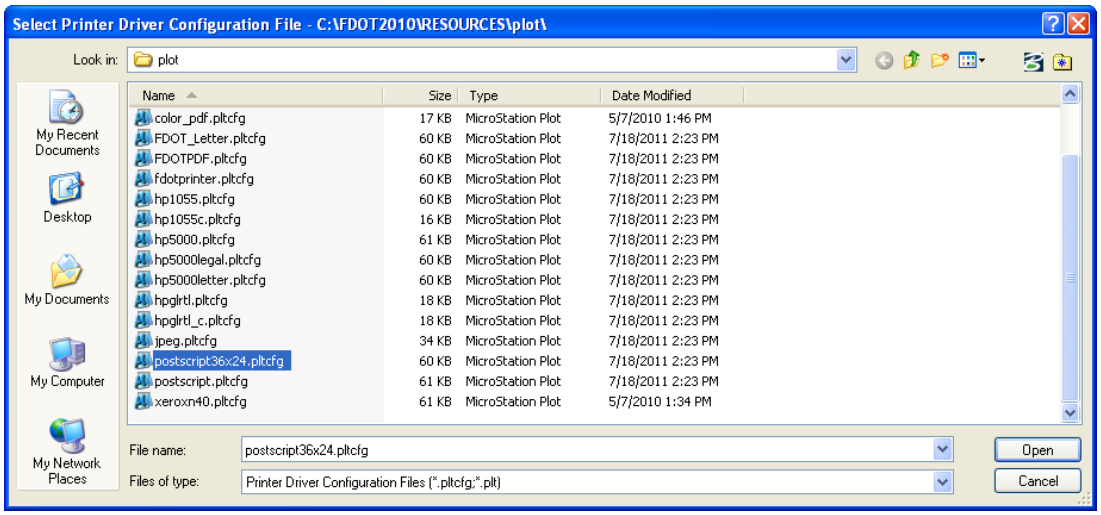
MICROSTATION PLOTTING

When using MicroStation to create plots the core of the process is to make and save the correct settings.

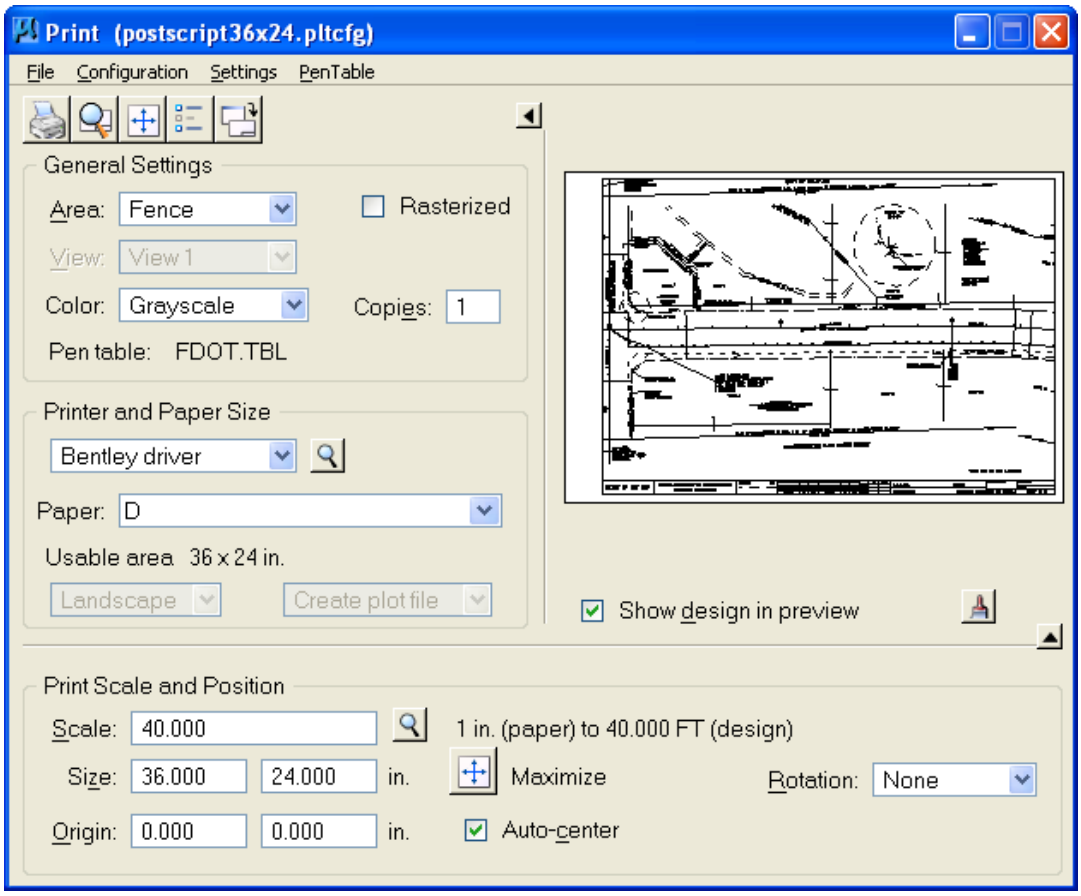
To access MicroStation, Plot select **Print** from the **Files** pull down.



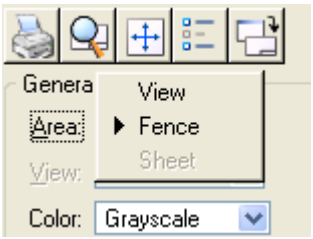
Initially this option will present the Print dialog allowing the selection of a specific print driver. The correct print driver is determined by the type of printing that is desired. To select the print driver click on the button in the Printer and Paper Size area and select the proper plot driver.



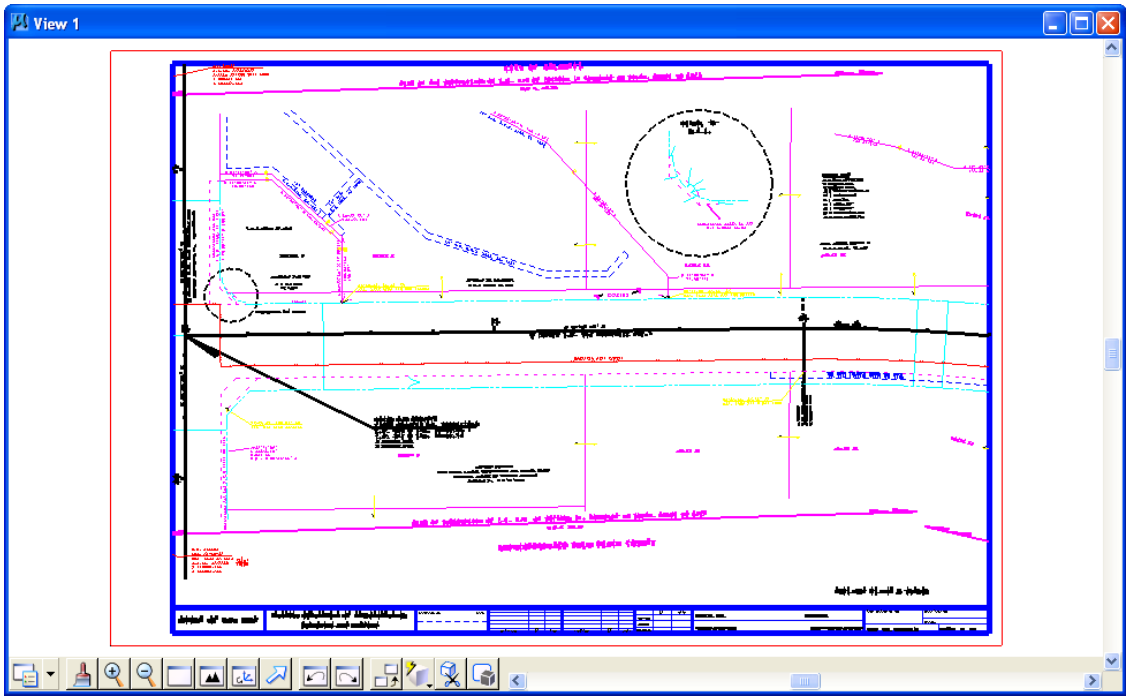
Once chosen, the print dialog will display. From this toolbox the user can select the print driver, select page sizes, scale and preview print sheets.



The first step in generating a print or plot is to define or select the area that needs to be printed. MicroStation allows three separate ways to accomplish this, View, Fence and Sheet. The user must set the **Area** option to match how the plot will be generated.



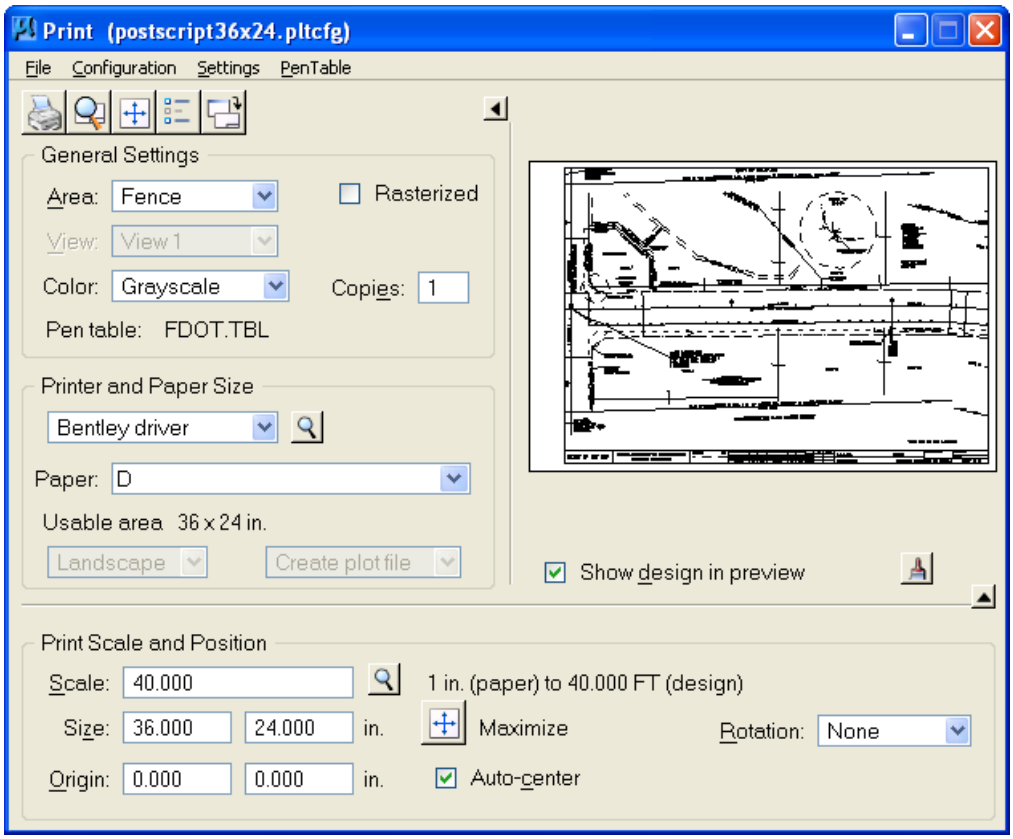
Plotting the contents of a MicroStation view or window is selected by picking the option **View**. MicroStation plots a view based on the exact way that the view looks; this is referred to as WYSIWYG (What You See is What You Get). The area within the view sets the scale; this should only be used when the output scale is unimportant. This method is not used for production printing.



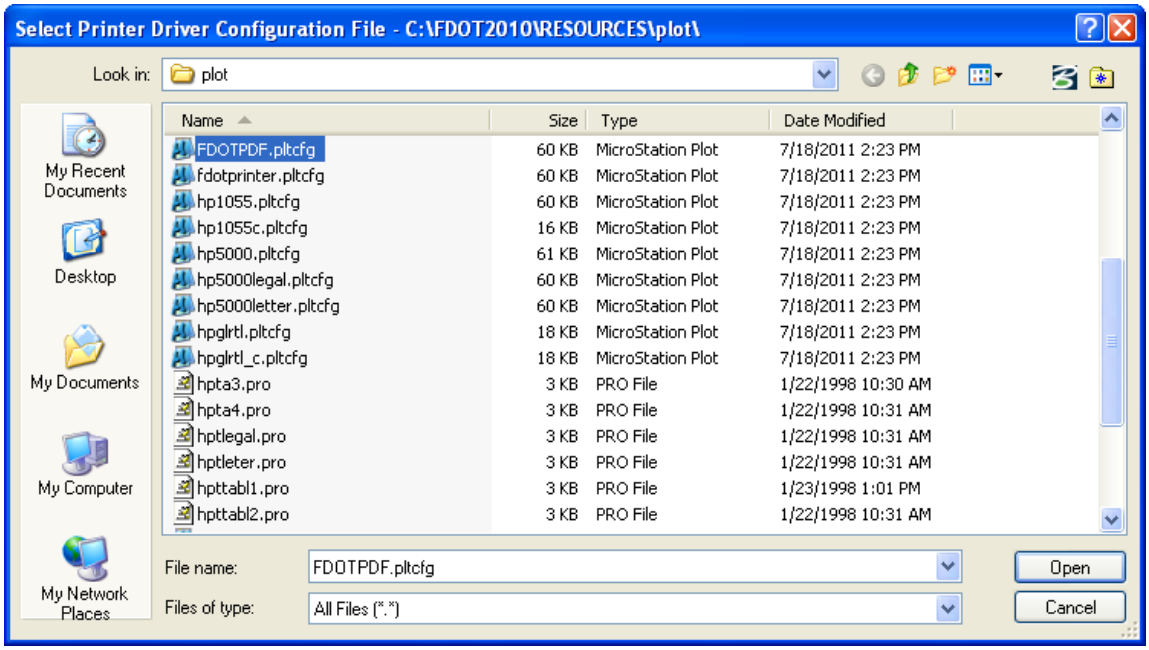
Plotting the contents of a fence is the preferred way. Place the fence at the location of the plot border then set the **Area** option to **Fence**. When placing a fence around an FDOT plot border be sure to snap/tentative point to the Inside shape; otherwise, the plot scale will not be correct.

 © 2015 FDOT

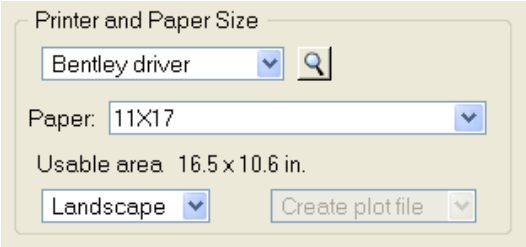
Note If plotting a fence, MicroStation will automatically detect that a fence has been placed, and will switch the Area toggle to Fence.



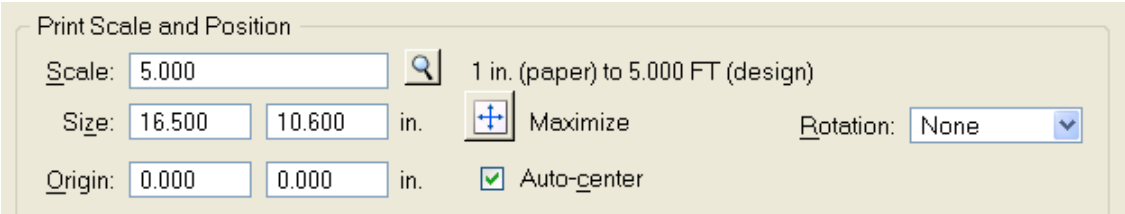
Prior to plotting the sheet, the user needs to select the printer and paper size. To set the printer, select the correct **Bentley Driver**.



Next, select the page size desired, remember that the page sizes displayed are determined by the PLT file chosen.



Once the **Printer** and the **Page Size** are selected the scale for the final plot must be set. If the sheet border has been placed at a scale by the F.D.O.T. FDOT Menu and the correct PLT file used there will be no reason to set the scale, the correct scale will already be defined.



To send the actual hard copy plot or image to either a file or print device, select the Print icon on the dialog **File > Print**.

FDOT PLT FILES

When beginning the plotting or printing process, it is important to consider which plotter/printer driver would be appropriate. MicroStation is delivered with a directory of sample plotter files. This directory contains printer drivers for more popular printers and plotters and will most likely be able to generate a plot without any editing. However, these printer drivers (PLT file) are fairly generic and are designed to work with all printers of that type. They will not, without editing generate a scaled plot that uses the F.D.O.T. borders and page sizes.

The FDOT Menu provides a variety of PLT files that are specifically modified for use in F.D.O.T. projects. The plot drivers are examples of plot drivers used to generate plots to scale using the sheet cells provided with the FDOT2008 software. All plot drivers have raster plotting enabled. These drivers are called examples due to various site-specific configurations and types of plotters that may be encountered.

These drivers have been tested and work properly on the plotters they were developed for. They will need minor adjustments if used with a different plotter to plot on center of paper and to appropriate scale.

© 2015 FDOT

Plot Drivers		
FILE NAME	**PLOTTER**	**DESCRIPTION**
36x24.pltcfg		Grayscale 36x24 (Raster Capable) Uses FDOT.TBL pen table
color.pltcfg		Color 11x17 (Raster Capable) Uses FDOT.TBL pen table and pscript.pro prolog file.
Color_Keysheet.pltcfg		Color 11x17 (Raster Capable) Uses FDOT_Keysheet.tbl pen table
color_pdf.pltcfg	PDF	Color 36x24 & 11x17 (Raster Capable) Uses FDOT.TBL pen table
FDOT_Letter.pltcfg		Grayscale 8.5x11 (Raster Capable) Uses FDOT.TBL pen table
FDOTPDF.pltcfg	PDF	Grayscale 36x24 & 11x17. A copy of Bentley's PDF.pltcfg with weights and styles set to FDOT standards. Uses FDOT.TBL pen table.
fdotprinter.pltcfg	Windows Printer	Grayscale 11x17. A copy of Bentley's printer.pltcfg with weights and styles set to FDOT standards. Uses FDOT.TBL pen table.
hp1055.pltcfg	HP 1055 CM	Monochrome 36x24 (Raster Capable) Uses 36x24.pro prolog file.
hp1055c.pltcfg	HP 1055 CM	Color 36x24 (Raster Capable) Uses 36x24.pro prolog file.
hp5000.pltcfg	HP 5000 GN	Monochrome 11x17 (Raster Capable) Uses FDOT.TBL pen table and hpttabl1.pro prolog file.
hp5000legal.pltcfg	HP 5000 GN	Monochrome 8.5x14 (Raster Capable) Uses FDOT.TBL pen table and pscript.pro prolog file.
hp5000letter.pltcfg	HP 5000 GN	Monochrome 8.5x11 (Raster Capable) Uses FDOT.TBL pen table and hptleter.pro prolog file.
hpglrtl.pltcfg	HP 1055 CM	Monochrome Paper size A,B,C,D&E (Raster Capable) Uses FDOT.TBL pen table
hpglrtl_c.pltcfg	HP 1055 CM	Color Paper size A,B,C,D&E (Raster Capable) Uses FDOT.TBL pen table
postscript36x24.pltcfg	N/A	Creates postscript image file. (Raster Capable) Uses FDOT.TBL pen table and 36x24.pro prolog file.
postscript.pltcfg	N/A	Creates postscript image file. (Raster Capable) Uses FDOT.TBL pen table and hpttabl1.pro prolog file.
xeroxn40.pltcfg	XEROX Docuprint N4025	Monochrome 11x17 (Raster Capable) Uses FDOT.TBL pen table and hpttabl1.pro prolog file.

© 2015 FDOT

Files used by Plot Drivers		
FDOT.tbl	N/A	Pen table that enters username, date time, and path to sheet borders.
FDOT_Keysheet.tbl		Pen table that enters username, date time, and path to sheet borders.
36x24.pro	N/A	Controls postscript image/plot output
FDOT_Letter.pro		Controls postscript image/plot output
hpta3.pro		Controls postscript image/plot output
hpta4.pro		Controls postscript image/plot output
hptlegal.pro		Controls postscript image/plot output
hptleter.pro		Controls postscript image/plot output
hpttabl1.pro		Controls postscript image/plot output
hpttabl2.pro		Controls postscript image/plot output
pscript.pro	N/A	Controls postscript image/plot output

Note The only modification needed, if used with the proper plotter, would be a change to the line in the PLTCFG file that contains the statement \\ServerName\PrinterName. This line is used to direct the output to the proper device.

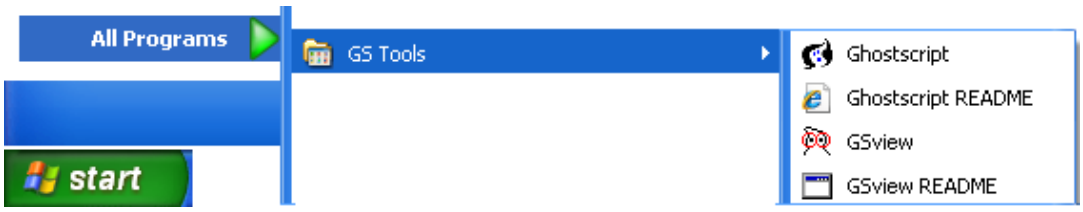
POSTSCRIPT PRINTING

Postscript files provide a convenient means of distributing plan sets. They can be submitted directly to most printers without an intermediary program and reflect the final product of a design file.

Part of preparing an electronic project includes generating PostScript files of all of the design sheets added to the Structures directory.

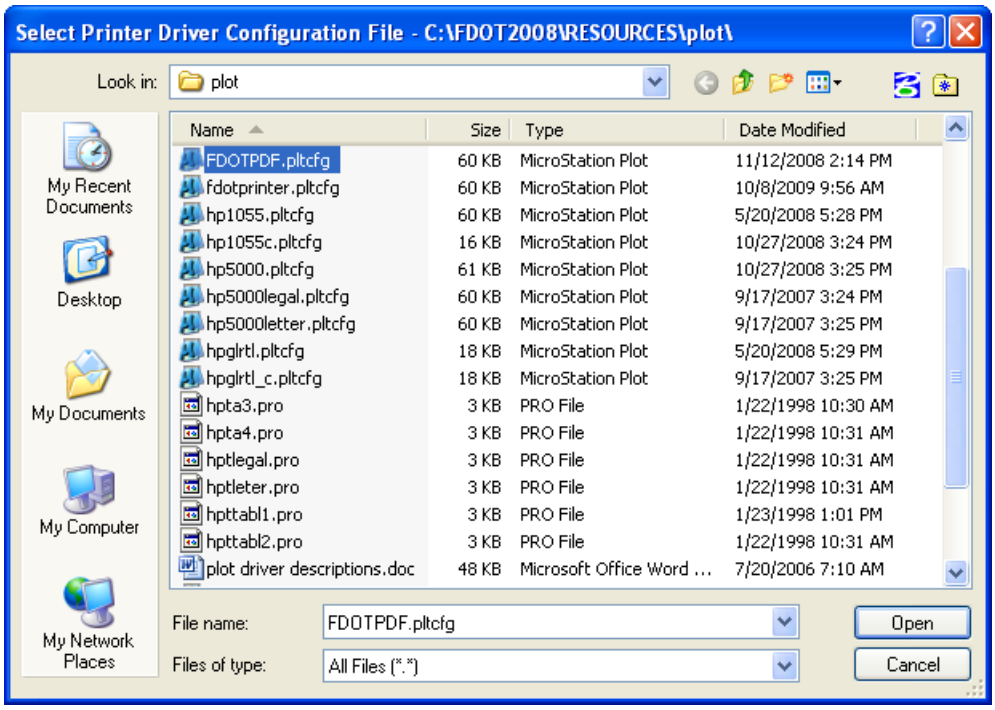
The procedures for plotting remain the same, the major difference is the PLT file used. There are two postscript plotter files, *postscript36x24.pltcfg* and *postscript.pltcfg*, used to plot Right of Way Mapping files.

There is also a plot driver designed for FDOT Postscript plotting designed to plot to a file. These files are created as EPS or Encapsulated Postscript files that can be read by a variety of applications including GhostView. GhostView is an application viewer that can be loaded with FDOT Menu application. Verify that GhostView is loaded onto the user's machine by selecting **Start > GS Tools**.

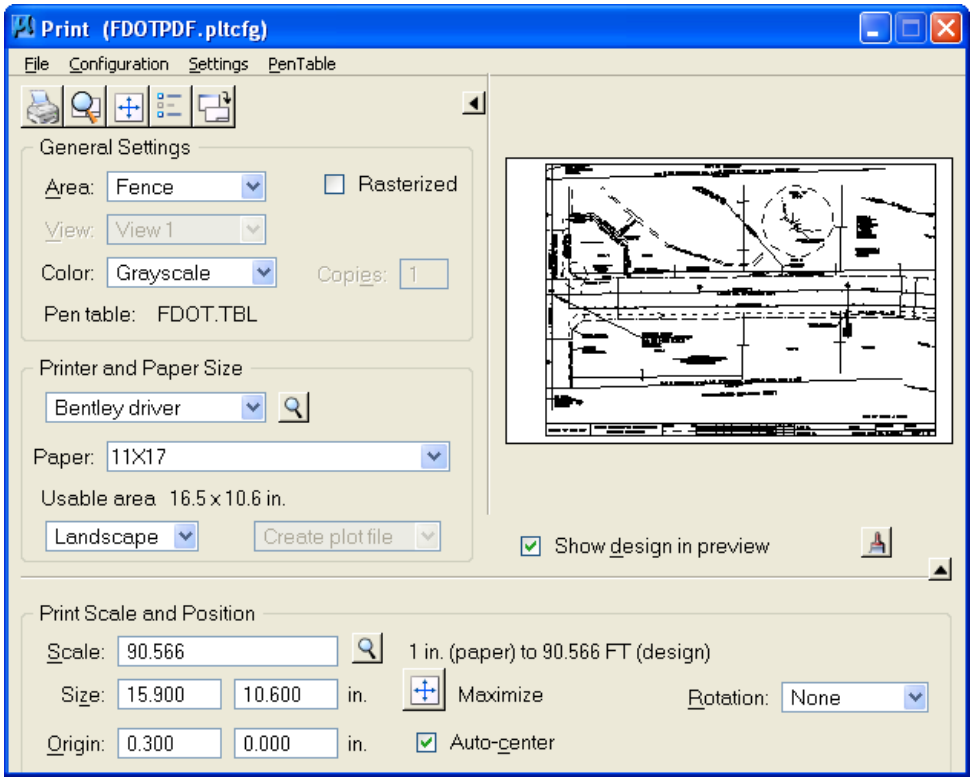


 © 2015 FDOT

There is also an alternative way of plotting, the addition of the ability to plot directly to Adobe PDF. The PLT files are provided in the FDOTXXX/RESOURCES/plot directory.

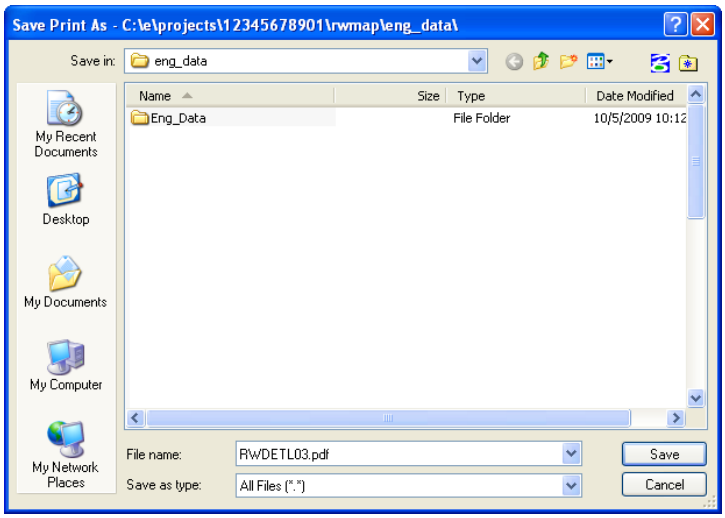


The PLTCFG files assume that Adobe's Acrobat PDF Writer is loaded and configured on the local machine. To plot using either method, follow the same steps for simple MicroStation plotting. But rather than select a standard PLTCFG file, select the PLTCFG previously discussed.

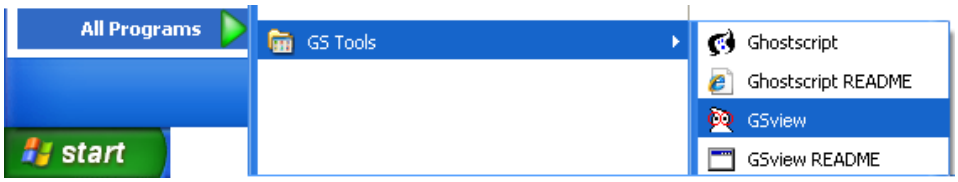


 © 2015 FDOT

When the Plot icon is selected a dialog will display prompting for a filename. For an Electronic Delivery, place the postscript images into the **rwmap\eng_data** sub-directory within the Project structure.



To view the image using GhostView, select **Start > GS Tools > GSView**.



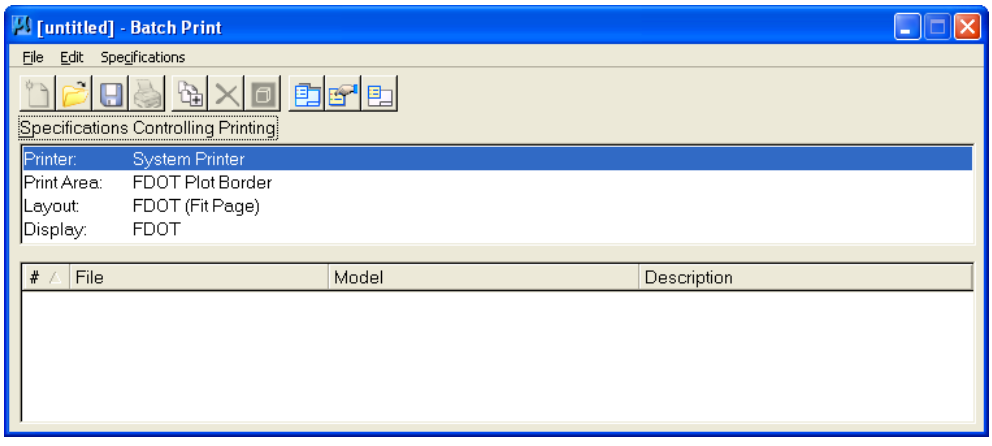
PEN TABLES

Pen Tables in MicroStation can be used to alter an elements display at plot time, change its priority in printing, ignore the element and not display the element or call a MicroStation Basic application.

For the FDOT pen tables are primarily used for adding text to the border as shown next, allowing arrows or terminators to be displayed on top of other elements, and turning off construction elements.

BATCH PRINTING (MSBP)

The MicroStation Batch Printing utility can generate hardcopy of Postscript files automatically from a centralized interface. MicroStation Batch Printing is launched by selecting **File > Batch Print**.

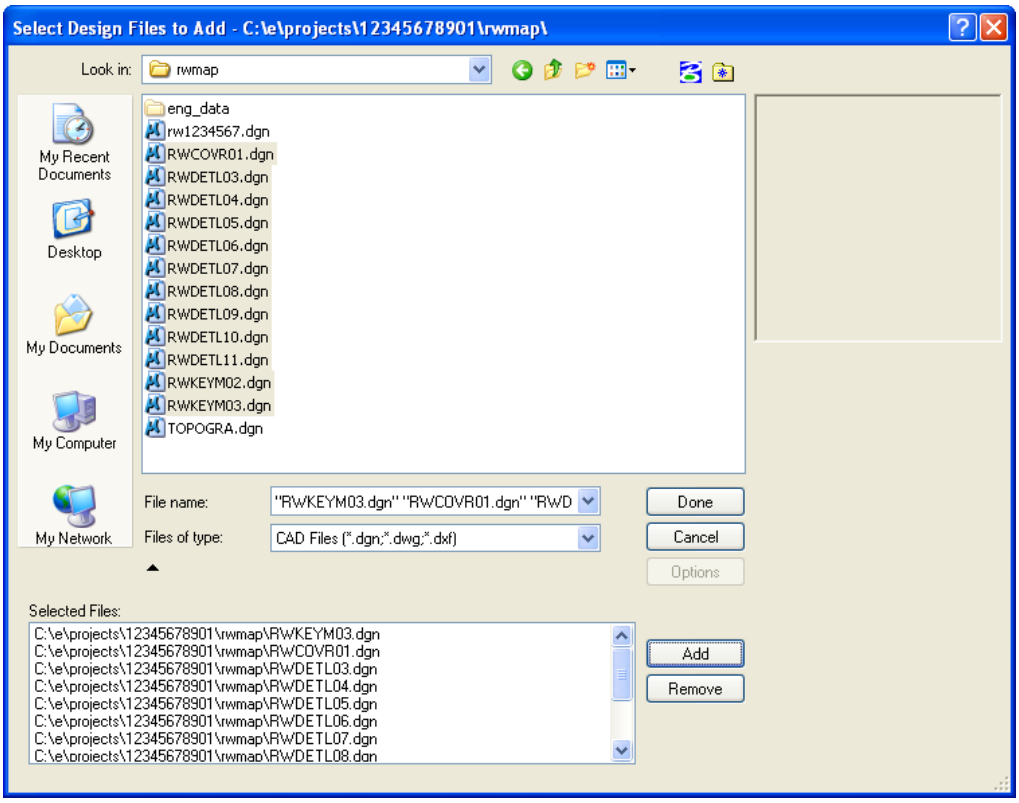


 © 2015 FDOT

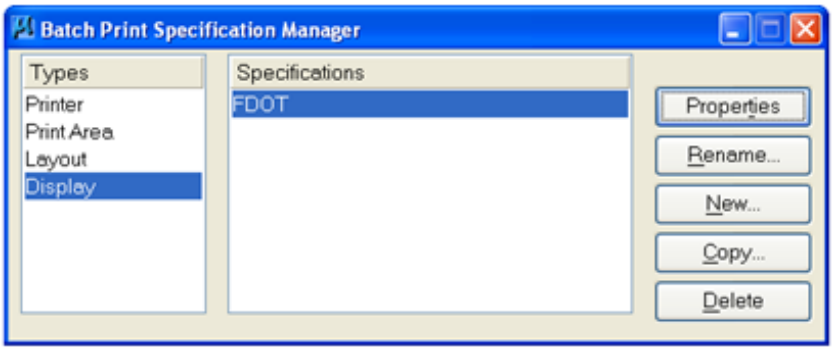
The steps for generating Postscript files are:

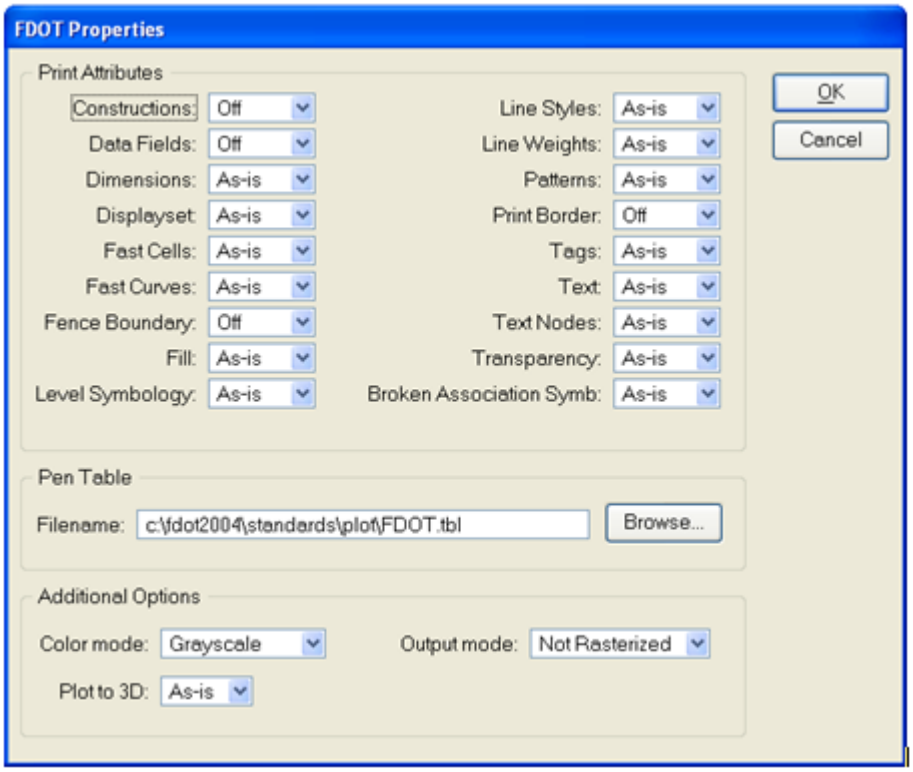
1. Specify the files
2. Select the Postscript driver
3. Create a batch plot list (mbp file)
4. Process the files

- To add files to the processing list:
  1. Select **Edit > Add Files**
  2. Select the desired files.
  3. Click the **Add** button to include the files into the list window at the bottom of the dialog.
  4. Click **Done**

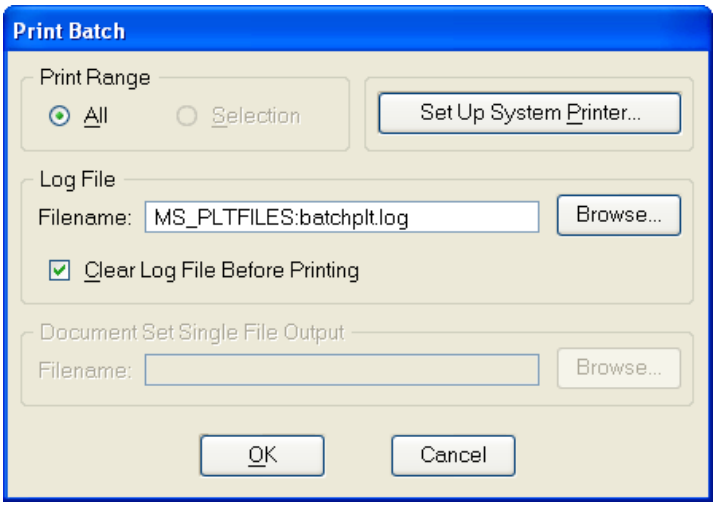


5. By selecting **Specifications > Manage** all aspects of the print can be managed.





6. Once everything has been set up, then by selecting the **Print** icon, printers and files may be selected as the target for the batch process.



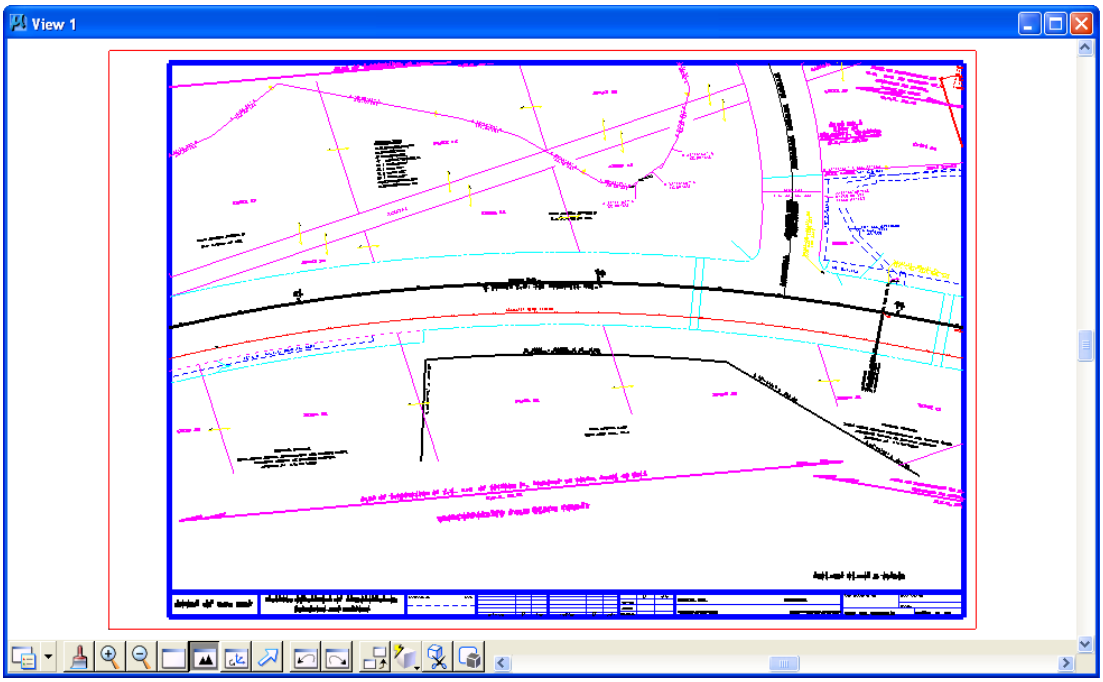
Note For Plotting PostScript files for FDOT deliverables, please attend the course **FDOT Electronic Delivery**

 © 2015 FDOT

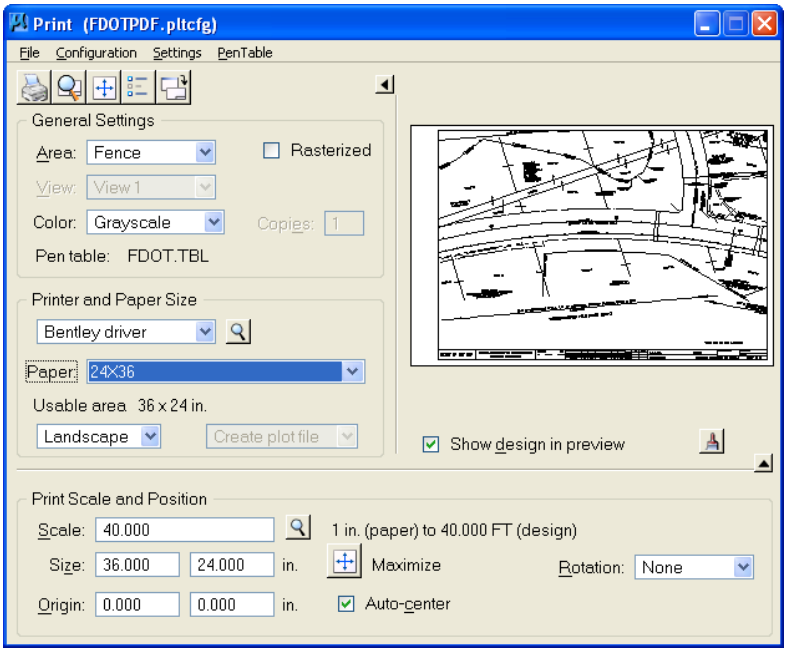
Exercise 19.1 MicroStation Plotting

➢ *Plot Setup*

1. Open the MicroStation file c:\e\projects\12345678901\rwmap*rwdetl04.dgn*. The drawing should display as shown.

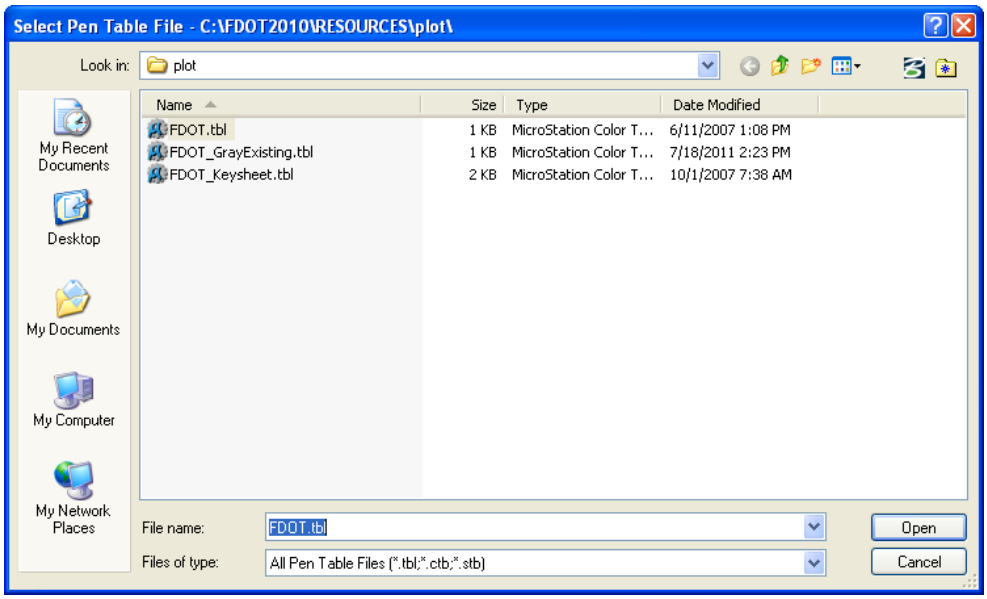


2. Next, select **File >Print** from the MicroStation main menu.
3. Place a *fence* around the **sheet border**. Make sure to snap to the red block. Notice the *Area* toggle switches to **Fence** automatically.

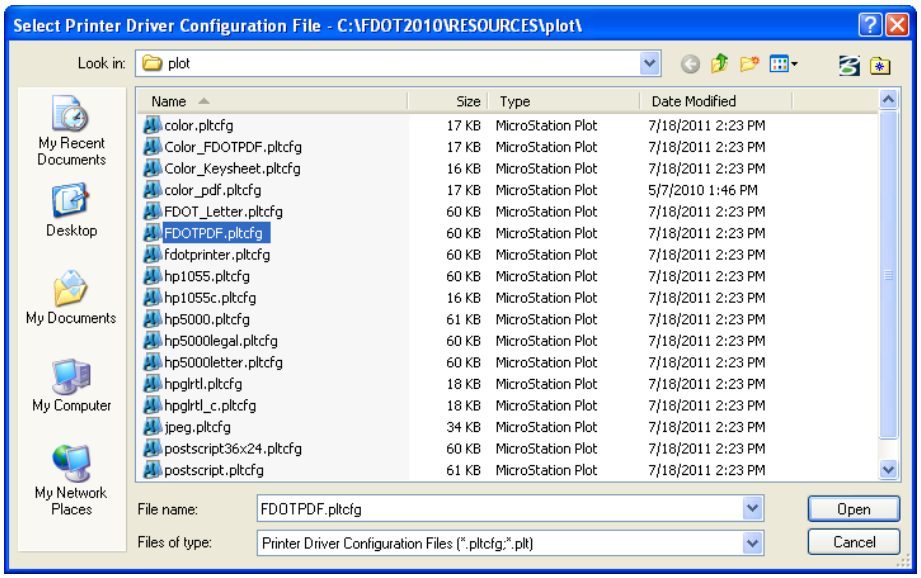


 © 2015 FDOT

4. If necessary, from the *PenTable* pull down at the top of the dialog, select **Attach** and select the **FDOT.tbl** pentable.



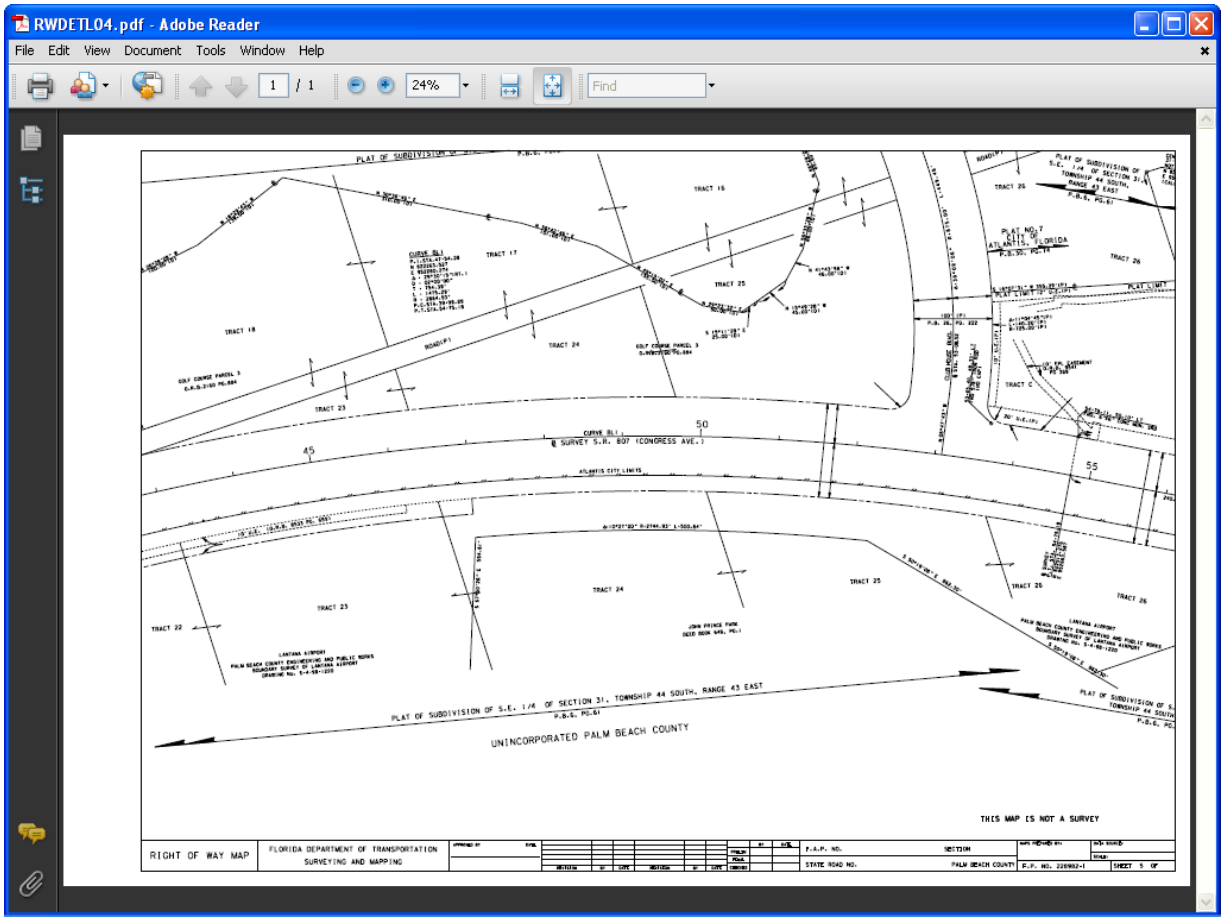
5. In the *Printer and Paper Size* portion of the dialog, set the toggle to **Bentley Driver**.
6. Click the **Browse** icon and select the *Driver* **FDOTPDF.pltcfg**. This driver will simply plot to a file.



Note If using this in a production environment the line, the variable: default_outFile/auto_overwrite = "\\?????\?????" would need to be revised to match the correct machine name and printer name. For example, if the server name was CADDTRNSERV and the printer name was XEROX_PS, then the line would need to be edited to: default_outFile/auto_overwrite = \\CADDTRNSERV/XEROX_PS

 © 2015 FDOT

7. Set the *Paper* toggle to the appropriate size **36x24**.
8. Click the **Print** icon from the dialog and place the file into the **rwmap\eng_data** directory.
9. This file now has been plotted to a PDF file which can be viewed with the Adobe Reader.



 © 2015 FDOT

APPENDIX A - RIGHT OF WAY TOOLBOXES

OBJECTIVES

This chapter will review the Tool Boxes available from the Right of Way FDOT Menu. Items covered will include:

- Review Tool Boxes
- Active Angle – Active Scale Tool Box
- Lines2 Tool Box
- Arcs2 Tool Box
- Drafting Tools Tool Box
- Civil/Site Tools Tool Box

INTRODUCTION

The *Tool Boxes* available from the Right of Way FDOT Menu provide a variety of tools for drafting purposes. Most of these tools will not directly apply to the FDOT Right-of-Way Mapper. However, the user should be aware of and practice these tools to determine how they might fit mapping production needs.

This chapter will focus on increasing the FDOT Right-of-Way Mappers awareness of the varied tools available from the Right of Way FDOT Menu.

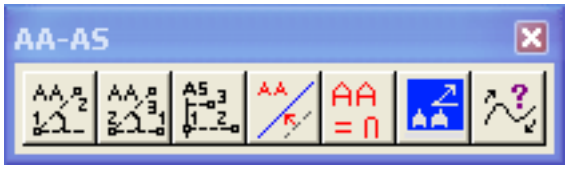
REVIEW TOOL BOXES

Under *Tool Boxes* from the Right of Way FDOT Menu are a total of five (5) tool boxes that provide a variety of drafting, settings, and viewing tools that can be of use to the FDOT Right-of-Way Mapper. On the next few pages are screen shots of each tool box and its icons along with brief descriptions of each command.

APPENDIX A

ACTIVE ANGLE – ACTIVE SCALE TOOL BOX

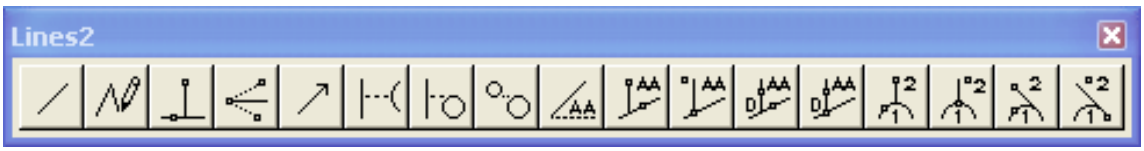
The *AA-AS* Tool Box has a variety of tools that allow the FDOT Right-of-Way Mapper to set the Active Scale, Active, and Change Element Direction in a DGN file. The *AA-AS* Tool Box is accessed by selecting **Tool Boxes > AA-AS Custom** from the Right of Way FDOT Menu. The *AA-AS* Tool Box, its associated icons, and descriptions for each tool are shown.



Icon	Command Description
	Sets the Active Angle by two Data Points.
	Sets the Active Angle by three Data Points.
	Sets the Active Scale by three Data Points.
	Sets the Active Angle by Data Point on the Element.
	Sets the Active Angle back to zero.
	Activates the MicroStation Active Angle dialog.
	Changes an Element's direction or start point. Used for reversing the direction of Custom Line Styles.

LINES2 TOOL BOX

The *Lines2* Tool Box combines most MicroStation 4.0 and 5.0 line construction tools some of which are no longer located in MicroStation into a single dialog for easy access by the FDOT Right-of-Way Mapper. The *Lines2* Tool Box is accessed by selecting **Tool Boxes > Lines2 Custom** from the Right of Way FDOT Menu. The *Lines2* Tool Box, its associated icons, and descriptions for each tool are shown.



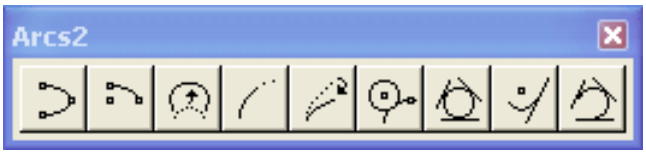
APPENDIX A

Icon	Command Description
	Activates the *Place Line* tool.
	Activates the *Place Stream Line String* tool.
	Activates the *Construct Line Bisector* tool.
	Activates the *Construct Angle Bisector* tool.
	Activates the *Place Active Line Terminator* tool.
	Activates the *Construct Minimum Distance Line* tool.
	Activates the *Line Tangent to Arc & Perpendicular to Line* tool.
	Activates the *Construct Line Tangent to 2 Elements* tool.
	Activates the *Place Line at Active Angle* tool.
	Activates the *Construct Line at Active Angle to Point* tool.
	Activates the *Construct Line at Active Angle From Point* tool.
	Activates the *Construct Line at Active Angle to Point (Key-in)* tool.
	Activates the *Construct Line at Active Angle From Point (Key-in)* tool.
	Activates the *Construct Perpendicular to Element* tool.
	Activates the *Construct Perpendicular from Element* tool.
	Activates the *Construct Tangent to Element* tool.
	Activates the *Construct Tangent from Element* tool.

© 2015 FDOT

APPENDIX A

ARCS2 TOOL BOX



Icon	Command Description
	Activates the MicroStation *Place Half Ellipse* tool.
	Activates the MicroStation *Place Quarter Ellipse* tool.
	Activates the MicroStation *Modify Arc Radius* tool.
	Activates the MicroStation *Modify Arc Angle* tool.
	Activates the MicroStation *Modify Arc Axis* tool.
	Activates the MicroStation *Construct Circle Tangent to Element* tool.
	Activates the MicroStation *Construct Circle Tangent to 3 Elements* tool.
	Activates the MicroStation *Tangent Arc by Radius* tool.
	Activates the MicroStation *Construct Arc Tangent to 3 Elements* tool.

© 2015 FDOT

APPENDIX A

CIVIL/SITE TOOLS TOOL BOX

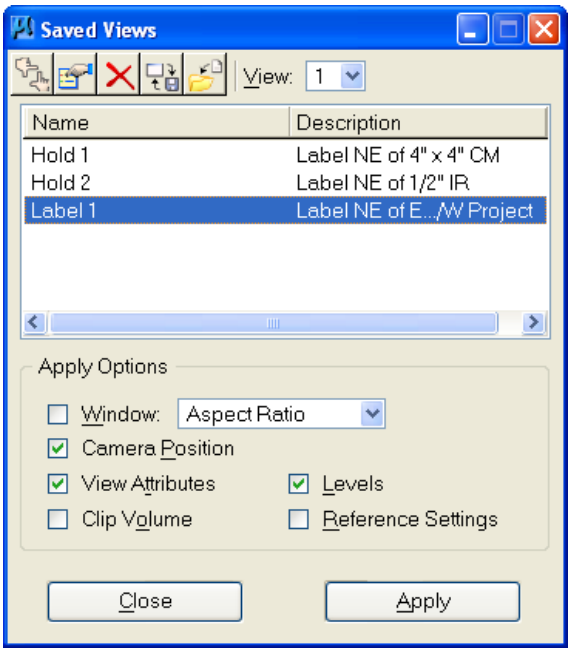
Icon	Command Description
	Activates the *Place Contour* tool.
	Activates the *Label Contour* tool.
	Activates the *Place Breakline* tool
	Activates the *Place Coordinate* tool.
	Activates the *Modify Contour* tool.
	Activates the *Set Element Elevation* tool.
	Activates the *Place Spot Elevation* tool.
	Activates the *Place Composite Curve* tool.
	Opens the Civil Tools Parameters dialog which allows the user to set the Level Symbology for the other tools in the *Civil/Site Tools* Tool Box.

© 2015 FDOT

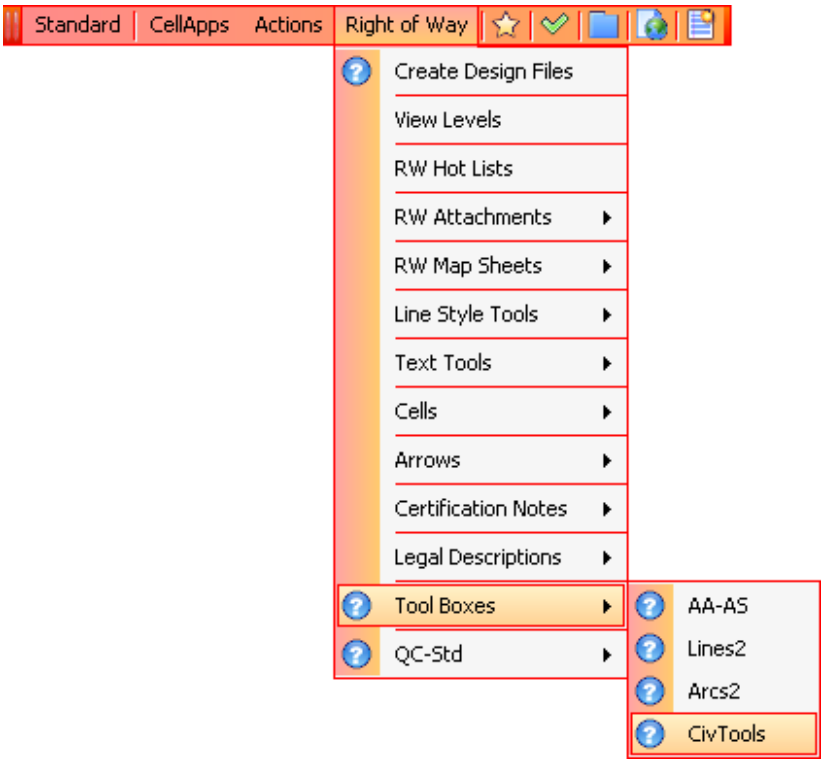
APPENDIX A

Appendix Exercise A 1 - Practice Using Toolbox Items

1. Open the MicroStation file C:\E\Projects\12345678901\rwmap*rwdetl06.dgn* and go to the *Saved View* **Label 1**.

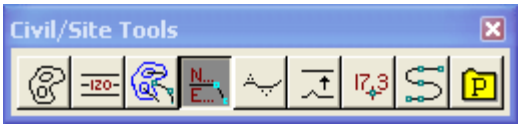


2. Select the **CivTools** Tool Box from the Right of Way FDOT Menu.

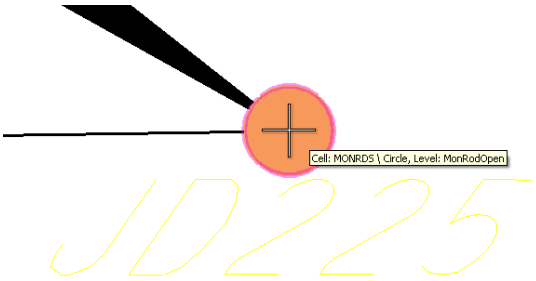


3. The *Civil/Site Tools* tool box displays. Select the **Place Coordinate** tool.

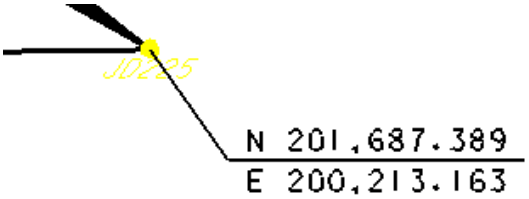
APPENDIX A



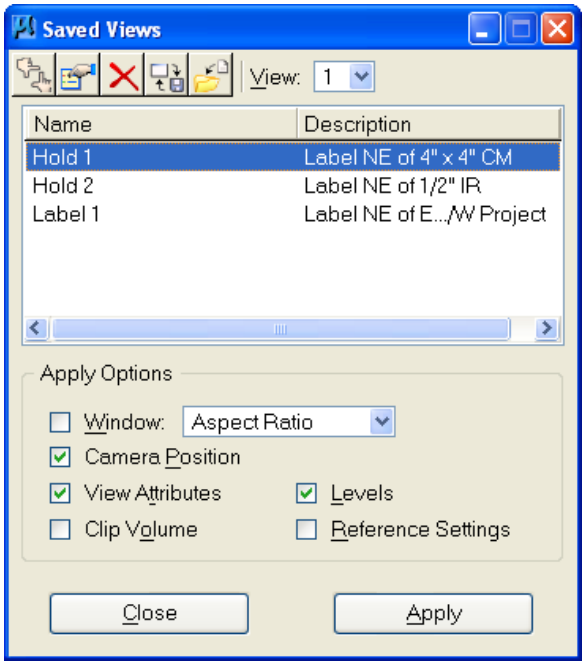
4. Place a **Tentative** at the center of the *Monument cell* as shown below, then place a **Data Point** to select the center of the Monument cell as the coordinate to be labeled.



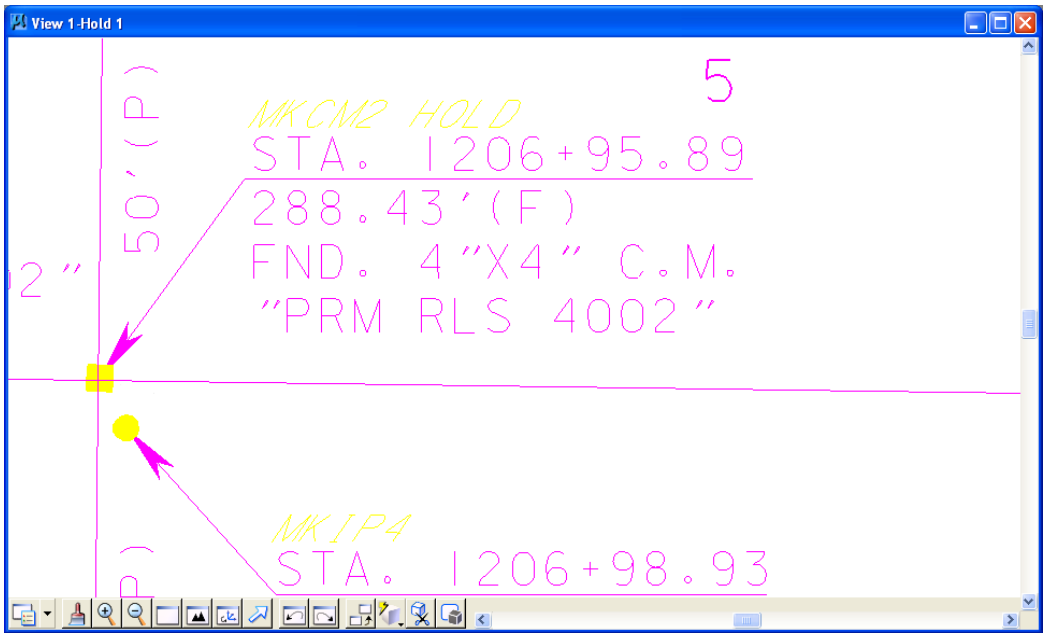
5. A leader line will be attached to the coordinates for the *Point* **JD225**. Place the coordinate label in a location similar to what is shown below.



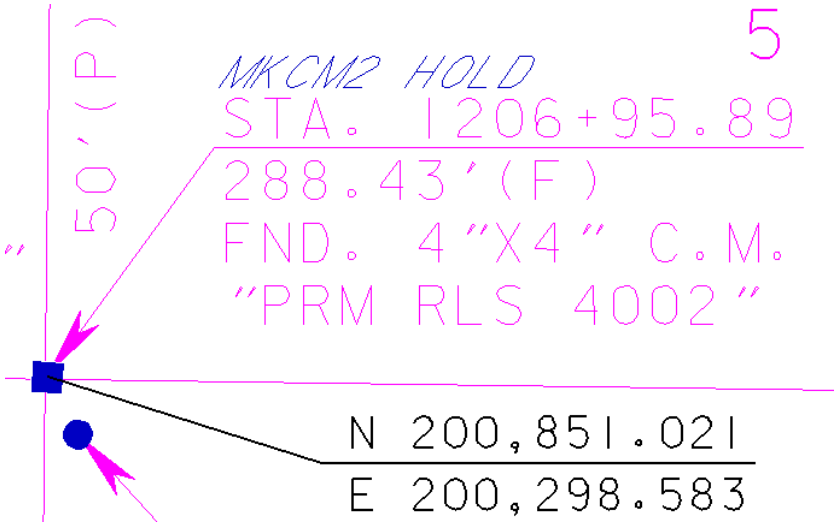
6. Go to the *Saved View* **Hold 1** as shown below.



7. The DGN file will display as shown. Once again, access the **Place Coordinate** tool.

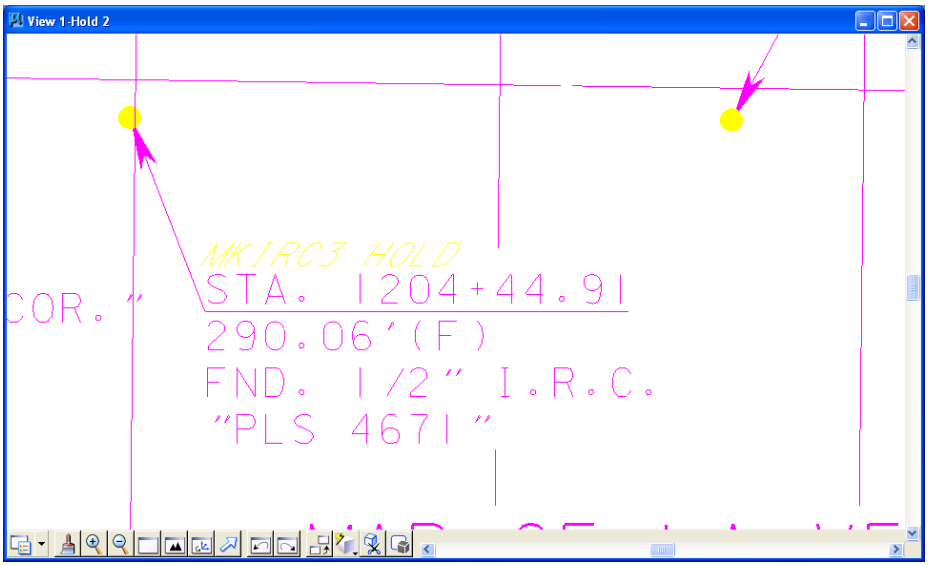


8. Use the same steps used previously to place the coordinate label for the *Point* **MKCM2** as shown.

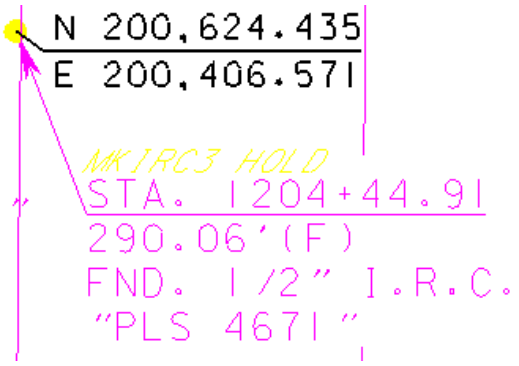


© 2015 FDOT

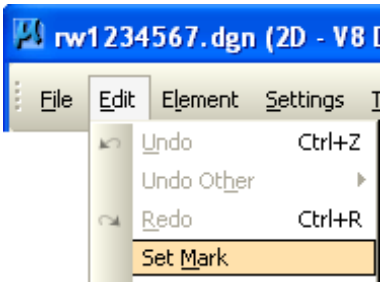
9. Go to the *Saved View* **Hold 2**. The DGN file will display as shown next. Access the **Place Coordinate** command once again.



10. Use the same steps used previously to place the coordinate label for the *Point* **MKIRC3** as shown.



11. If time allows, take the next few minutes to experiment with as many of the tool boxes as possible. Before starting, select **Edit > Set Mark** from the MicroStation menu. This will place a bookmark in the DGN file so that any changes made to the DGN file can be *Undone* back to the point of the **Mark**.



12. From the MicroStation menu, select **Edit > Unto Other >To Mark** to remove any unwanted changes to the DGN file.

 © 2015 FDOT

APPENDIX B - PEDDS SIGNING & SEALING

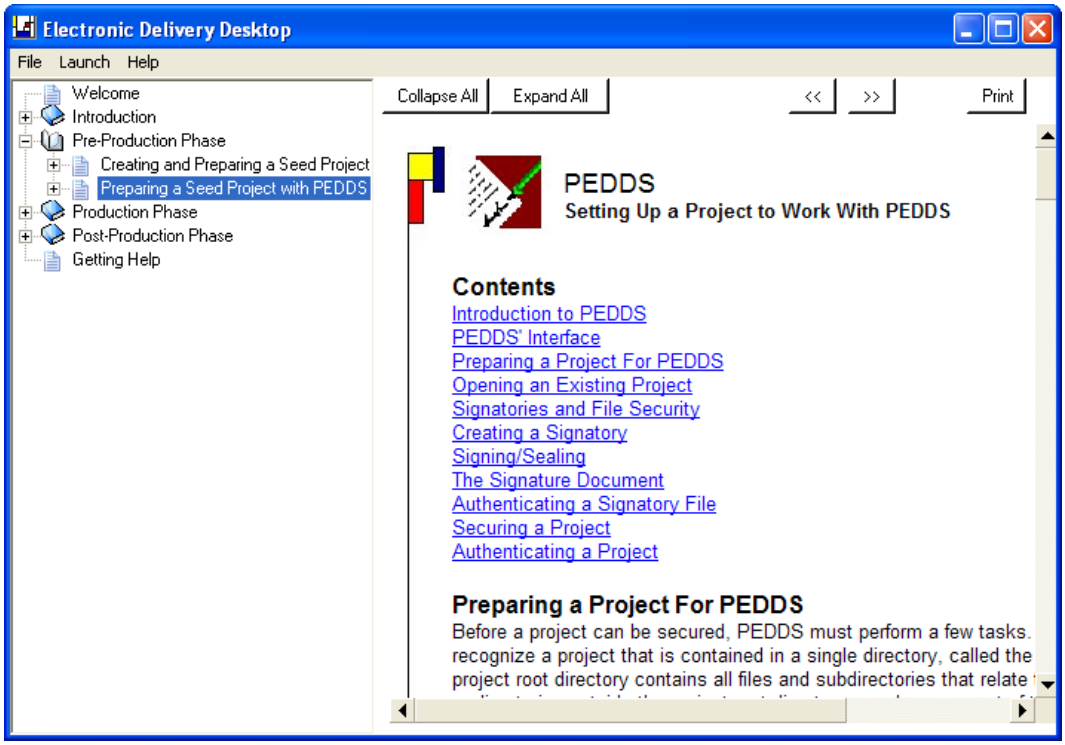
OBJECTIVES

This appendix will review the Professionals' Electronic Delivery ***System*** (PEDDS) Signing and Sealing.

INTRODUCTION TO PEDDS

Before a project can be secured and sent to the design consultant, the project must become known to PEDDS. PEDDS is an application used to simplify tasks involved with file security. PEDDS allows users to sign electronic files, ensuring that users can easily test to determine if a project has been changed, corrupted or tampered with. Before PEDDS allows securing, etc., a PEDDS Project ID file and the Project Header must be created. The Project ID file contains additional data (metadata) about the project including identities of key personnel, location information, etc., while the Project Header contains information about the reasons why the project is being secured. PEDDS provides a means of creating a Project ID file. Users may also use this tool to add or modify existing information in the Project ID file.

In addition to a META INFO directory, a PEDDS project is defined by the set of directories and files existing in the tree-like structure beneath a directory labeled with a valid FDOT project identification number and known as the FDOT CADD Project. The FDOT CADD Project contains all files and subdirectories related to the project. No files or directories outside of the FDOT CADD Project may become part of the project. Before creating a new PEDDS project, the user must know which project directory structure is desired for PEDDS to secure. Note that all file operations (copy, move, etc.) are handled outside of the PEDDS program.



 © 2015 FDOT

APPENDIX B

PEDDS PROJECT META INFO

Due to the information needed to properly set up project metadata, FDOT strongly recommends that seed projects are prepared by the project manager in charge of the project or a responsible party charged with creating the project. This project metadata is created and stored in the PEDDS Project Identification file, ProjectID.xml.

Not all descriptive metadata about a project is required at project startup, but it is important to enter as much information that is known at the time to reduce errors needed for later correction. The information needed to completely set up the project identification includes the following.

- Financial Project Identification Number (FPID) which becomes the project's folder name (11characters as the default) THIS IS REQUIRED
- Federal Aid Number, if any
- Consultant Contract Number and execution date if applicable
- Project usage (As designed, as bid, as built, other)
- Location Information that the project will pertain to including county, section/subsection, beginning mile post, and ending mile post
- Project Designation, or local name (i.e. Veteran's Expressway)
- State Road Number(s) for the designated roadway
- Disciplines that will apply to the project
- Bridge information, if applicable, including bridge numbers, bridge on surface designation, and
- Bridge over surface designation
- A general project description (i.e. milling and resurfacing from A to B)
- A list of general key words that pertain to the project, that can be searched for in the future
- Any additional comments relative to the Identification of the project
- The name and title of the project's FDOT Project Manager
- The names and areas of responsibility of all Professionals of Record
- The name of the Consulting firm, if any or the FDOT District performing the work
- The Consultant's vendor number, if any

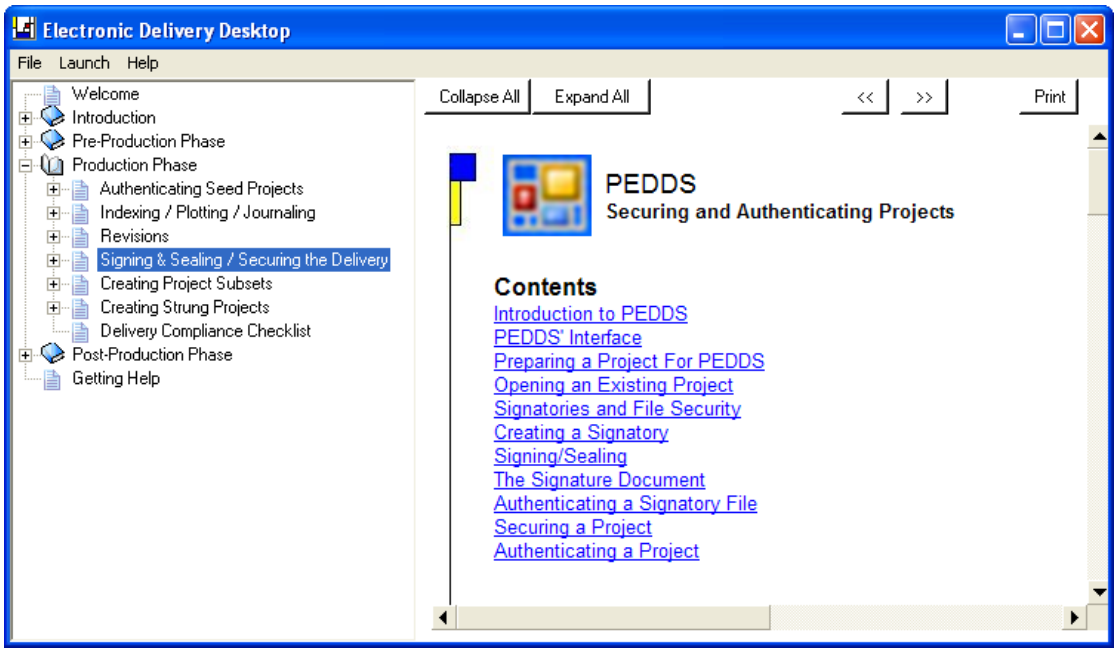
Warning *The **Create File/Project** tool and the* MicroStation ***Manager** methods of FDOT CADD Project creation **DO NOT** create the PEDDS Project Identification File (ProjectID.xml). If the FDOT CADD Project is created using these methods, the user **MUST** make the FDOT CADD Project "PEDDS aware" by following the steps in the following section.*

APPENDIX B

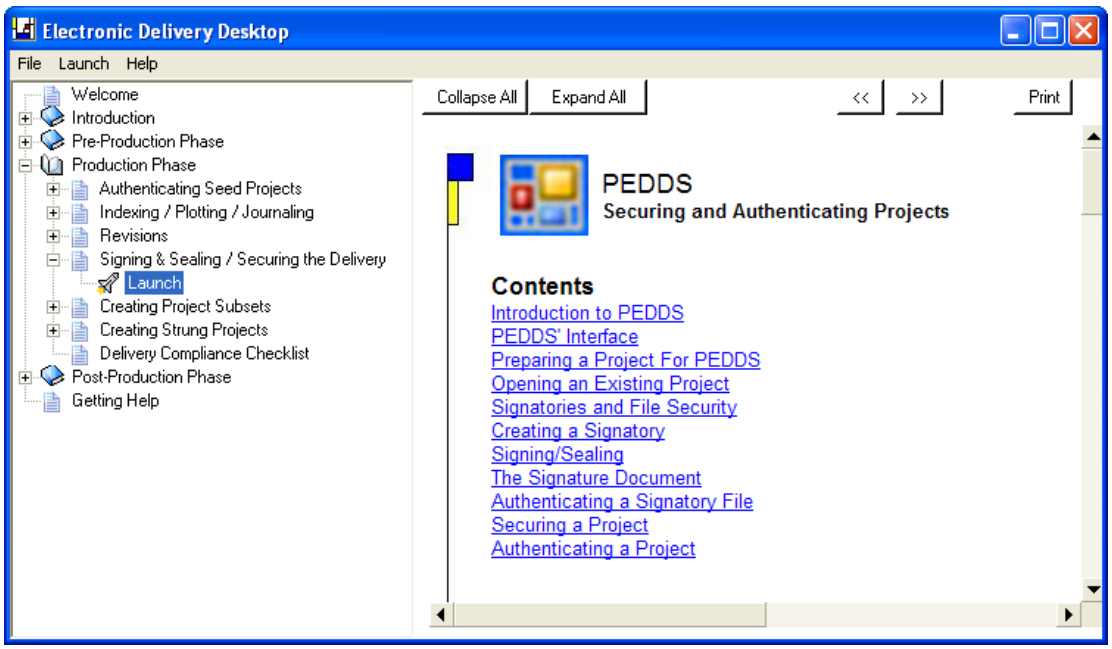
Appendix Exercise B 1 - PEDDS Signing and Sealing

➢ *Signing and Sealing PostScript Sheets*

1. Open the Electronic Delivery Desktop from the FDOT folder on the Desktop.



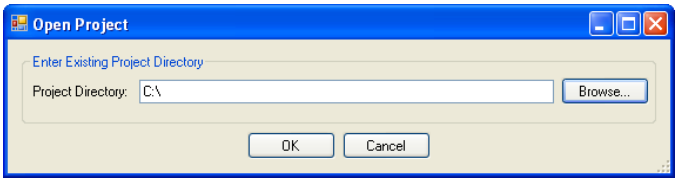
2. From the Electronic Delivery Desktop dialog, navigate to Production Phase/Signing & Sealing/Securing the Delivery and click **Launch** to open PEDDS.



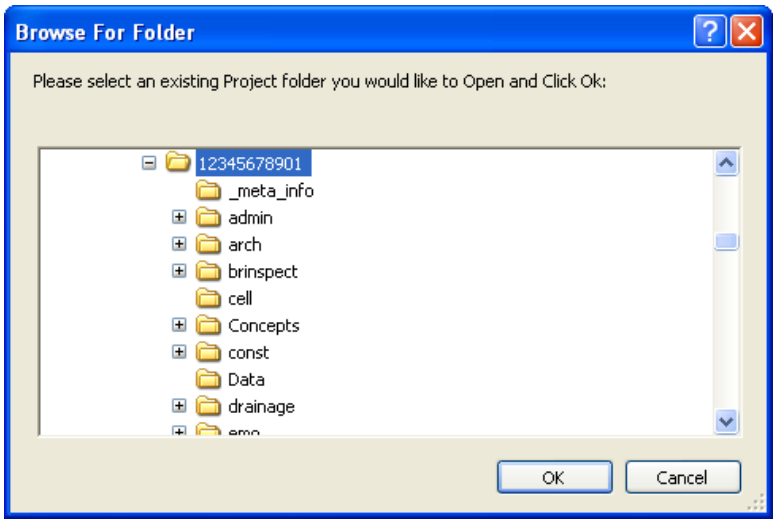
 © 2015 FDOT

APPENDIX B

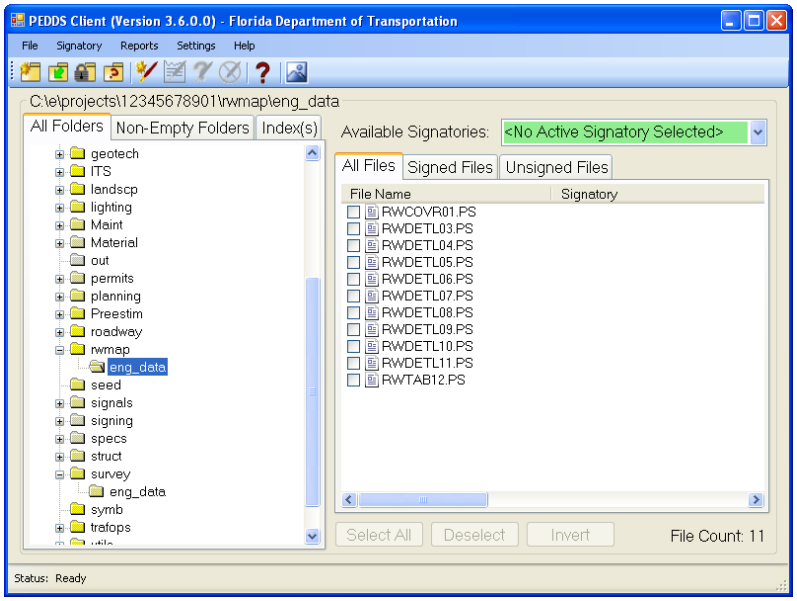
3. From the *Project* menu, click **Open**, or click the **Open Project** button on the tool bar.



4. Click the **<Browse…>** button, navigate to the *Projects* folder and select *Project* **12345678901**. Click **OK** to open the **12345678901** project.

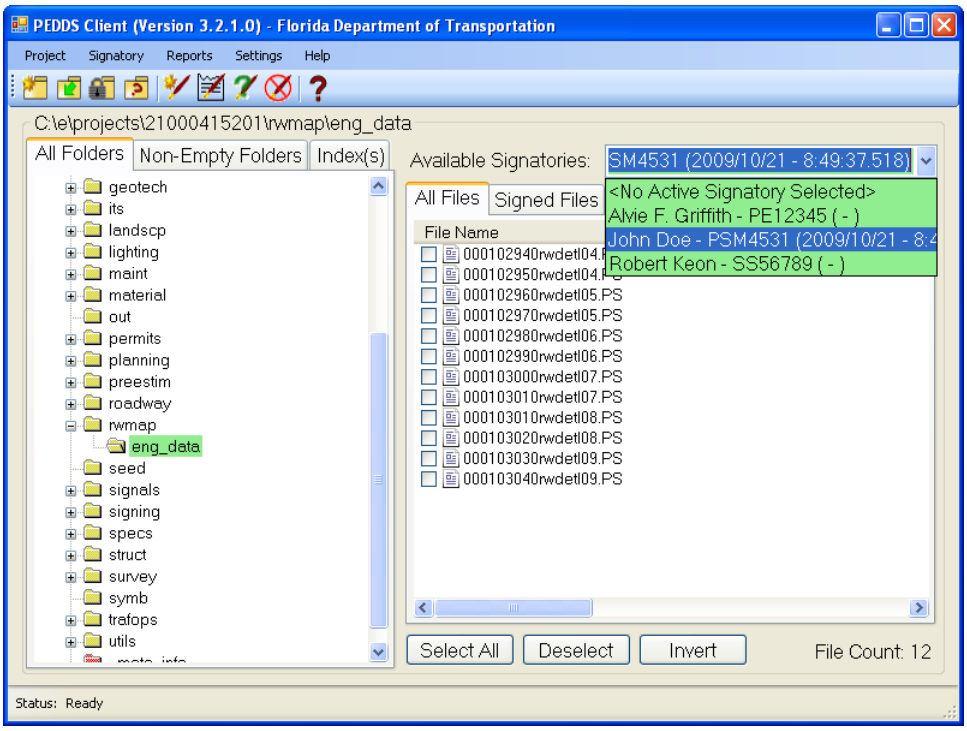


5. Using the directory tree on the left-hand side of PEDDS, select the **\rwmap\eng_data** folder. Postscript (PS) sheets generated by EDI will be displayed on the right-hand side of PEDDS.



Note The generation of Postscript (PS) sheets from FDOT CADD Project DGN files is fully covered in the FDOT Electronic Delivery (Production) class offered by ECSO.

6. From the *Current Signatory* pull-down, select **John Doe** as the *Signatory*.

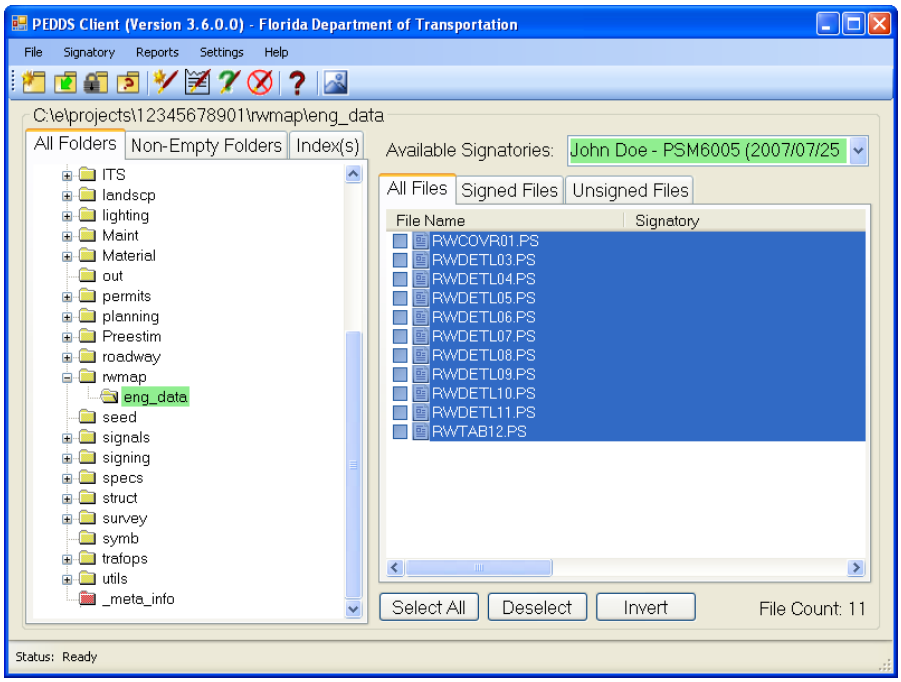


Note The creation and management of signatories is fully covered in the FDOT Electronic Delivery (Production) class offered by ECSO.

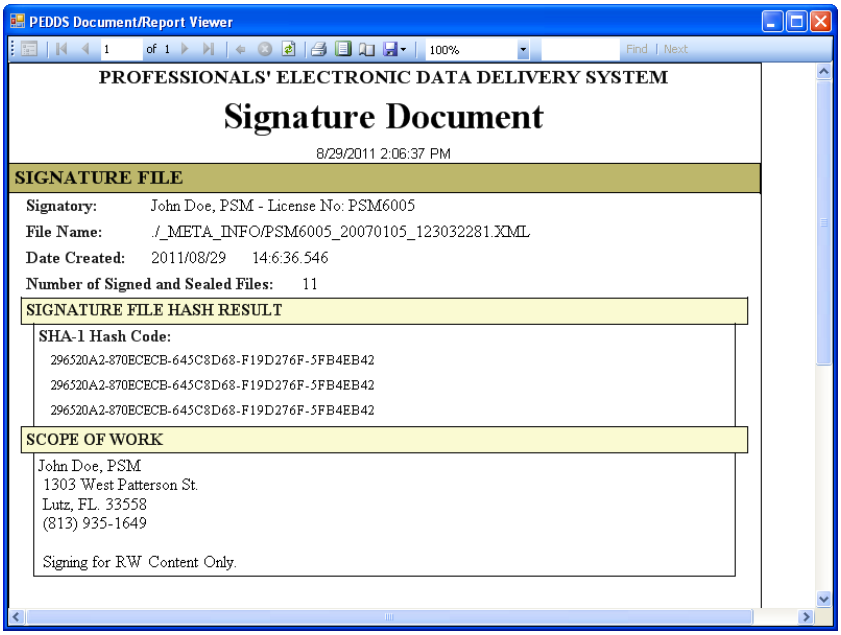
7. Enter **12345** as the *Password* and click **OK**.

 © 2015 FDOT

8. Click the **Select All** button and the file list will now display as shown next.



9. Select **Signatory > Sign and Seal** from the PEDDS menu or click the **Sign and Seal the Current Signature** button to sign and seal the selected files.
10. Review the *Signature Document* and then click **OK**.



11. Close PEDDS and the Electronic Delivery Desktop.

© 2015 FDOT

APPENDIX C - AUTOCAD DWG/DXF OPTIONS

OBJECTIVES

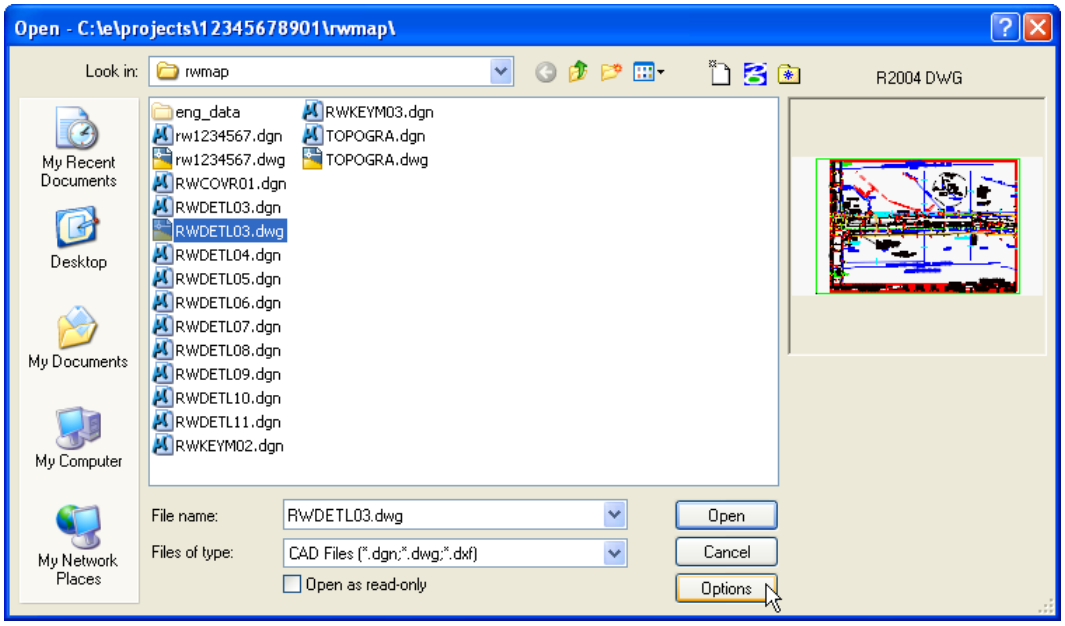
This appendix will review the MicroStation design environment options for dealing with AutoCAD DWG and DXF files.

DWG/DXF FILE OPEN OPTIONS

FDOT Right-of-Way Mapping delivery files should only be accepted in MicroStation's native DGN format. The following is shown only for reference.

When opening a .DWG or .DXF file, the **Options** button will be activated. Clicking this button allows the user to access some additional options that are specific to .DWG and .DXF files.

Note This button is active only while a DWG or DXF file is selected in the Files list box.

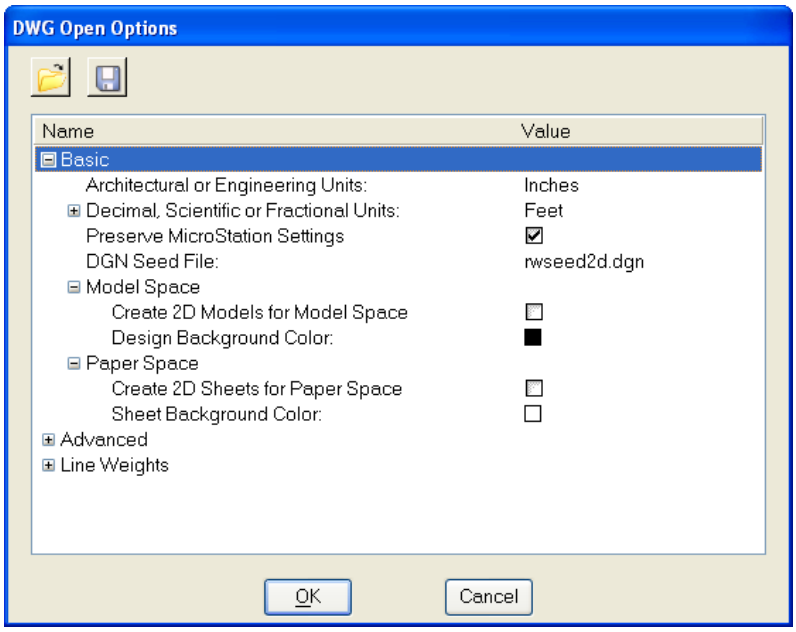


When the **Options** button is selected, the following dialog is displayed allowing the user to select multiple settings to control how DWG/DXF files are handled.

APPENDIX C

BASIC OPTIONS

FDOT requirements for specific settings are shown in the dialog and listed in the table:



- **Architectural or Engineering Units** — Sets the default MicroStation linear units for DXF or DWG files created with Architectural or Engineering Units. These should be set to inches per FDOT standards.
- **Decimal, Scientific or Fractional Units** — Sets the default MicroStation linear units for DXF or DWG files created with Decimal, Scientific or Fractional Units. This should be set to Survey Feet per FDOT standards.
- **Preserve MicroStation Settings** — If selected, MicroStation settings that cannot be saved as DWG settings are stored in the DWG file as an XRECORD so that they can be recalled the next time the file is opened in MicroStation. This option should be checked ON per FDOT standards.
- **DGN Seed File** — Specifies which design file to use as a seed file MicroStation settings not found in the DWG file. This should be set to rwseed2d.dgn per FDOT standards.
- **Model Space Options**
  - Create 2D models for Model space — If selected, AutoCAD's model space is represented by a 2D model in MicroStation, and any 3D data in the AutoCAD file is "flattened". If this is not selected, AutoCAD's model space will be represented by a 3D model in the DGN file. This option should be checked ON per FDOT standards.
  - Design Background Color — Sets the background color for the design. The background color should be set to Black per FDOT standards.

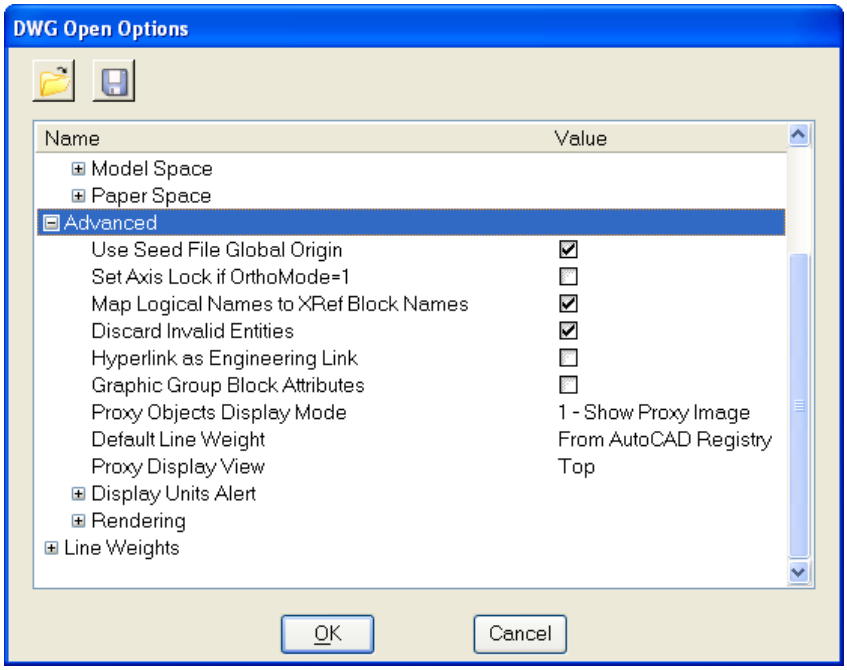
- **Paper Space Options**

  - Create 2D sheets for Paper space — If selected, AutoCAD's paper space is represented by a 2D model in MicroStation, and any 3D data in the AutoCAD file is "flattened". If this is not selected, AutoCAD's paper space will be represented by a 3D model in the DGN file. This option should be checked ON per FDOT standards.

  - Sheet Background Color — Sets the background color for the sheet. The background color should be set to White per FDOT standards.

ADVANCED OPTIONS

FDOT requirements for specific settings are shown in the dialog and listed in the table:



- **Use Seed File Global Origin** — If selected, the DWG will use the global origin and unit resolution of the DGN file that the user specifies in the DGN Seed File Section. Should be checked **ON** per FDOT standards.

- **Set Axis Lock if Ortho Mode =1** — If selected, sets the Axis Lock in the DGN file if Ortho Mode is activated in the DWG. Should be checked **OFF** per FDOT standards.

- **Map Logical Names to XRef Block Names** — When saving a DGN as a DWG, use this option when dealing with reference files. The logical names of the reference files become XREF block names in the DWG file. Should be checked ON per FDOT standards.

- **Discard Invalid Entities** — If selected, the entities with invalid (abnormally large) coordinates are automatically removed when the file is saved. Should be checked **ON** per FDOT standards.

- **Hyperlink as Engineering Link** — If selected, DWG hyperlink will be converted to an Engineering Link. If, however, the hyperlink does not have a URL address (as in a model link), it will be converted to a Design Link. Should be checked **OFF** per FDOT standards.
- **Graphic Group Block Attributes** — If selected, the Graphic Group lock is turned on, so that if one element in a graphic group is manipulated, all elements in the graphic group are manipulated. Should be checked **OFF** per FDOT standards.
- **Proxy Objects Display Mode** — This setting controls how these objects are displayed in MicroStation.
  From AutoCAD Registry — If AutoCAD is installed on the machine, then the current AutoCAD setting will be used.
  0 - Do Not Show Proxy — Proxy objects are not displayed
  1 - Show Proxy Image — Proxy objects are displayed.
  2 - Show Proxy Box — Proxy objects are displayed as boxes.
  Should be set to 1 per FDOT Standards
- **Default Line Weight** — Sets the default line weight to be either from the AutoCAD settings, or as a set dimension. Click on the value to open an option menu that has options of "From AutoCAD Registry" or a physical size. Should be set to "From AutoCAD Registry"
- **Proxy Display View** — In AutoCAD applications can display different geometry based on the view orientation. Currently, MicroStation does not support this and, therefore, a DWG proxy is displayed with a single representation independent of the view orientation. This setting controls the selection of this presentation. If "Isometric" is selected, the object typically will be represented as 3D geometry. If, however, "Top" is selected, only a 2D representation may be included. Should be set to TOP per FDOT Standards
- **Display Units Alert** — These options identify conditions that cause the DWG/DXF Units alert box to display. All options should be checked **ON** per FDOT standards.
- **Rendering** — Controls how materials and light sources are used when converting to DWG. All options should be checked **ON** per FDOT standards.

SAVING AND OPENING SETTINGS

While all of the above options are available, the user will rarely have to worry about setting them up. The options can be saved into a .dws file, which contains all of the settings necessary for the DWG/DXF to map properly. Ask the District CAD Administrator regarding the correct settings file to use. The following tools are located at the top of the DWG settings box.

Opens an existing .dws settings file

Saves the current setting as a .dws settings file.

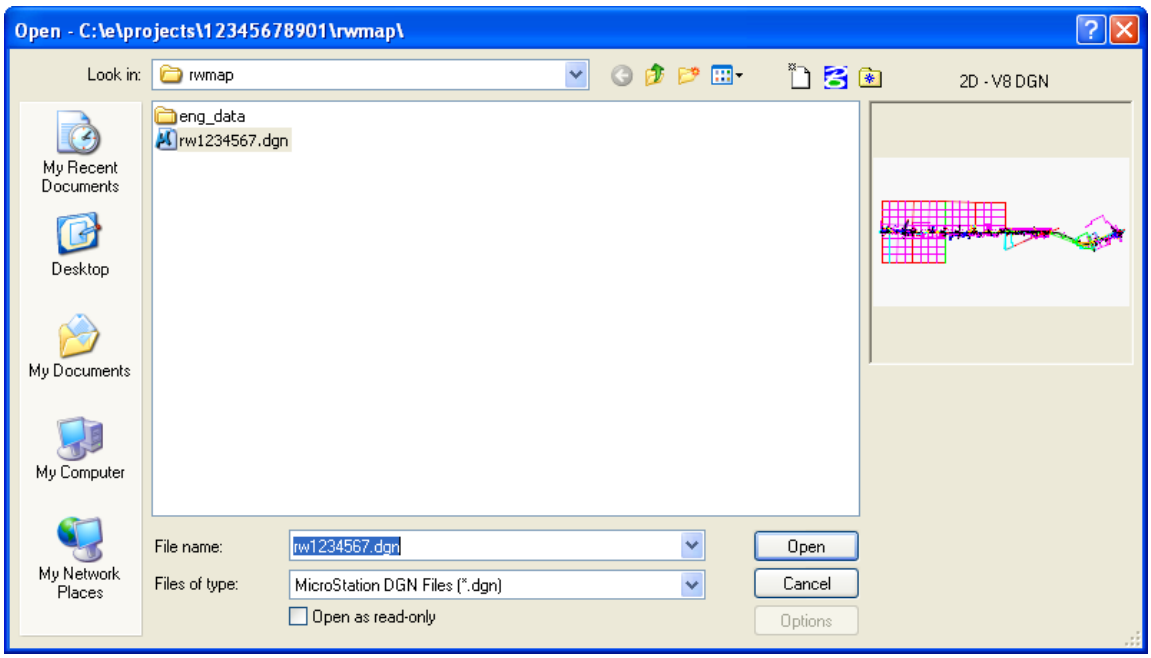
Note	Except for the additional options available, opening a .DWG file follows the same workflow as opening a DGN file

© 2015 FDOT

APPENDIX C

OPENING DRAWINGS FROM THE EDITING ENVIRONMENT

Once in a MicroStation file, options are provided to allow the user to switch to other DGN files. The Open tool allows the user to open and edit an existing drawing from the editing environment. It is not necessary to return to the MicroStation Manager to open another drawing.



The user can navigate to a different folder by selecting the directory tree at the right of the dialog. Many of the same options that are in the MicroStation Manager display in this dialog as well. Select a file and click the **Open** button, or double-click on a file to open it.

LEVEL MANAGER

The FDOT standard contains a large number of levels, and every level that is needed in drawing creation should already exist. Because level information is tied so closely to QC, the FDOT standard interface does not allow users to create, delete, import or export levels.

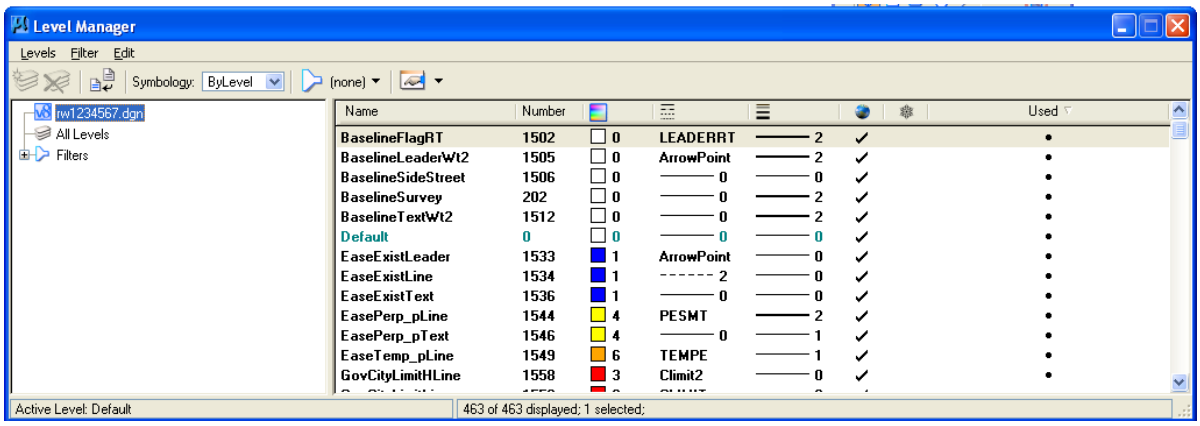
All of the levels that are present in a drawing come from an attached DGNLIB. This is a library of information. It includes level structure, filter information, and level symbology.

Some miscellaneous levels exist in the drawing for "scratch" drawing. If a new level is desired, requests for new levels are to be addressed through the user's Technical Advisory Committee (TAC) member.

Although most of the level-editing functions have been disabled, there is still a use for the Level Manager. The Level Manager can be used to freeze and lock levels. Symbology may also be edited, but if it is changed, it will revert to the original symbology the next time that the drawing is opened.

The Level Manager can be opened by selecting the MicroStation menu option: **Settings > Level > Manager**

<OR> by clicking the **Level Manager** icon from the MicroStation *Primary Tools* toolbar.

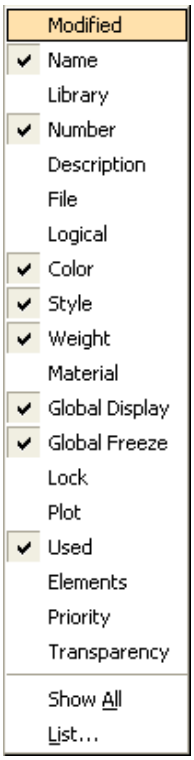


To turn off a level using the Level Manager**,** click the check mark that is next to the level name under the heading **Global Display**. This turns the level off in all views. Click the check mark again to turn the level back on.

To freeze a level using the Level Manager, click the check mark that is next to the level name under the heading **Global Freeze**. This turns the level off in all views. Click the check mark again to thaw the level.

To add additional columns to the Level Manager display, the user can right-click on top of any column to display a listing of all available columns as shown below. Checkmarks indicate that the column is already displayed.

Columns may be sorted by left-clicking on the top of any column. Sorting by the **Used** column can be very useful as all Used Levels are then grouped together in the *Level Manager* listing.



Note	Turning on/off level display is basically the same as thawing /freezing levels, with one difference. When a level is frozen, any cells or references placed on that level will not be displayed, regardless of how levels are used in the elements that make up the cell or reference.

APPENDIX C

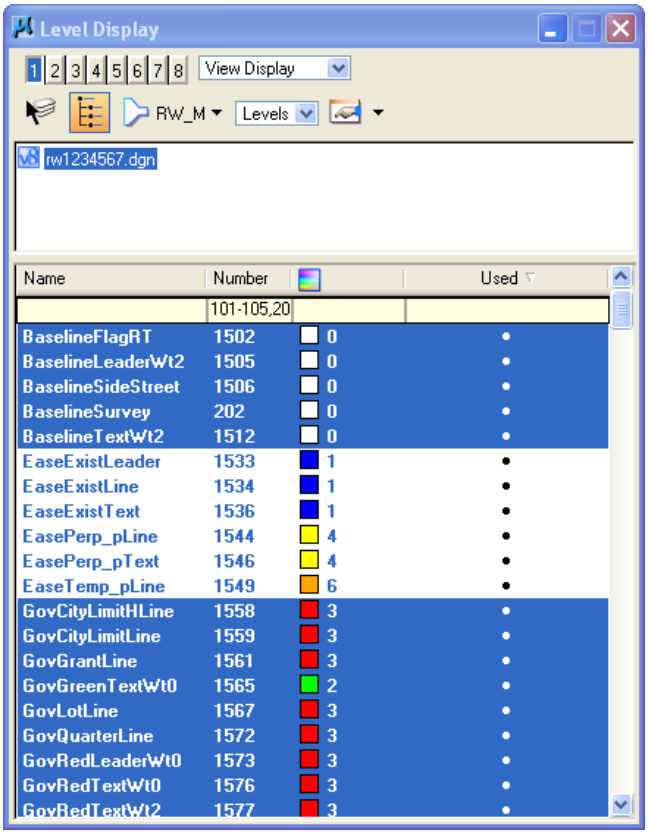
BY LEVEL SYMBOLOGY

When using MicroStation to create a FDOT drawing, the color, style and weight should be set to *By Level*. This setting allows the level to control the active color, line style, and line weight. This ensures that the levels follow FDOT standards.

The Color, Line Style, and Line Weight combo boxes each have a *By Level* option. This should be set as part of the seed file and not deviated from.

LEVEL DISPLAY

One of the biggest advantages of using levels in a drawing is the ability to control level display. This is done through the Level Display dialog. The Level Display dialog can be docked and resized as needed. Level Display can be accessed by going to **Settings** > **Level** > **Display** or by choosing the Level Manager icon from the MicroStation *Primary Tools* toolbar.



To toggle levels Off and On, simply click on the level name. A level with a black background is on, and a level with a gray background is turned off. If the level name is in bold type, it is being used in the drawing. A used level is a level with elements on it.

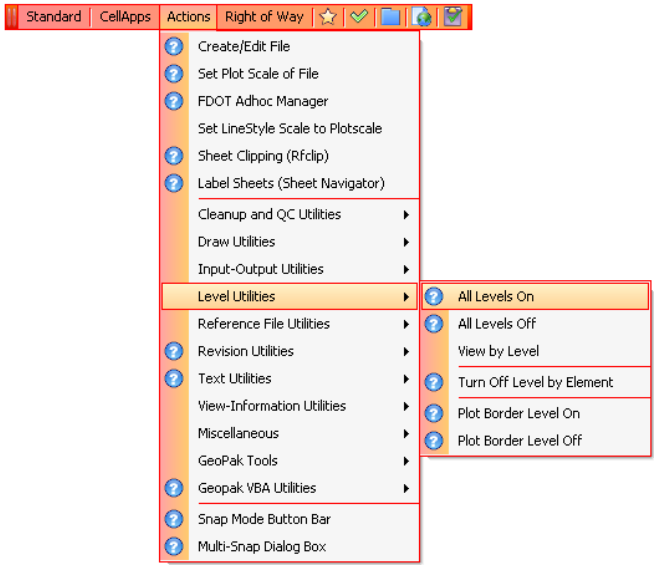
The Active Level has a green background. To make a level the Active Level using the Level Display dialog, double-click the name of the level that is to be set as the Active Level.

The View Numbers at the top of the box determine which view the levels will be turned off or on in.

The Show Target Tree button opens the file target area. This is used to turn levels off and on it reference files.

APPENDIX C

Other Level Utilities can be accessed from the FDOT Menu under the Actions pulldown.



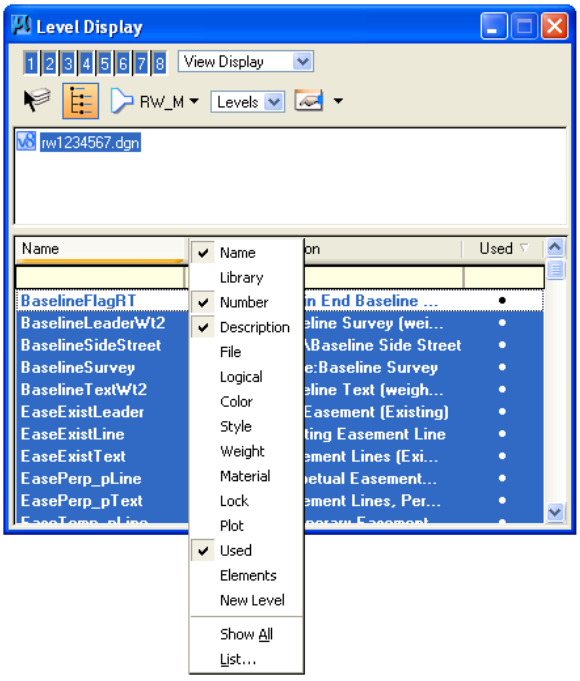
SORTING LEVELS

As stated earlier, the FDOT standard has roughly 2500 levels on which elements may be placed. As a result, it becomes necessary to sort them intelligently so that the user is not overwhelmed with the sheer volume of levels.

Items in the **Level Display** dialog can be sorted by simply re-ordering the list, or applying filters.

SORTING THE LEVEL LIST BY HEADINGS

Clicking on a heading name will sort the list according to the heading selected (i.e. Number, Name, and Used). Click once to sort ascending and click a second time to sort descending.



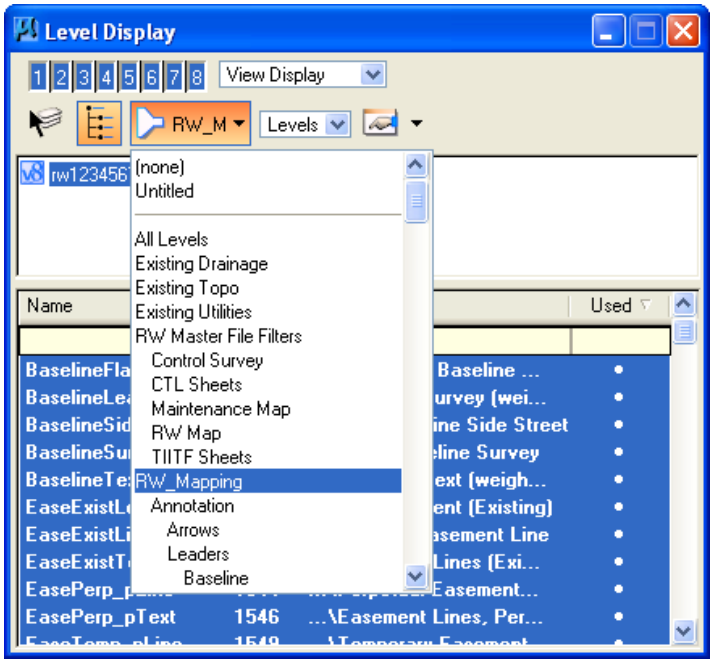
More categories can be added by right-clicking on an existing category and choosing the category name to add from the list. The list of heading may be re-ordered my dragging a heading to a new location.

APPENDIX C

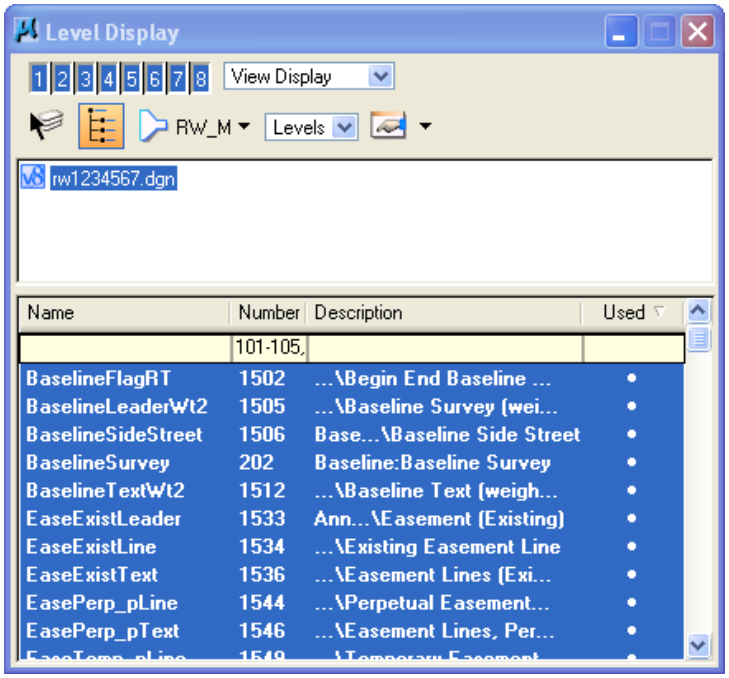
APPLYING FILTERS

Another way to sort and organize the list of levels is by using level filters. FDOT seed files have a set of filters already attached to them. These filters allow the user to see only the level names of interest.

To activate a filter, select its name from the filter drop down list.



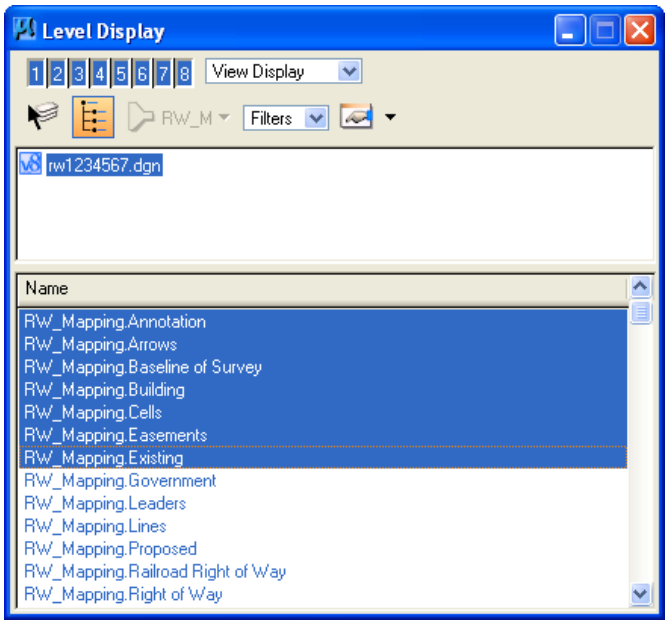
The filter drop down list is also found in the Attributes tool box. This method will display only levels matching the filter in the level list window.



© 2015 FDOT

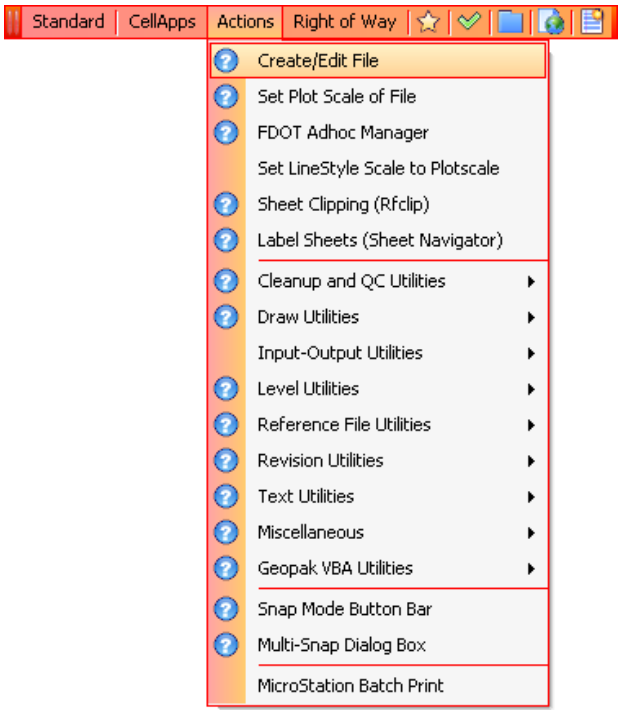
APPENDIX C

The user can also change the level list to display only level filters. In this mode the user can turn levels on and off by selecting the filter. This is accomplished by changing the Level toggle to Filter at the top of the dialog.



CREATING FILES FROM THE FDOT MENU

While the standard MicroStation tools can be used to create new files, FDOT provides a Create/Edit File utility to create new files with correct seed file and naming structure already in place. To access this utility, select either **Right of Way > Create Design Files** <OR> **Utils > Create/Edit File** from the FDOT Menu. This will cause the Create File/Project dialog to display.



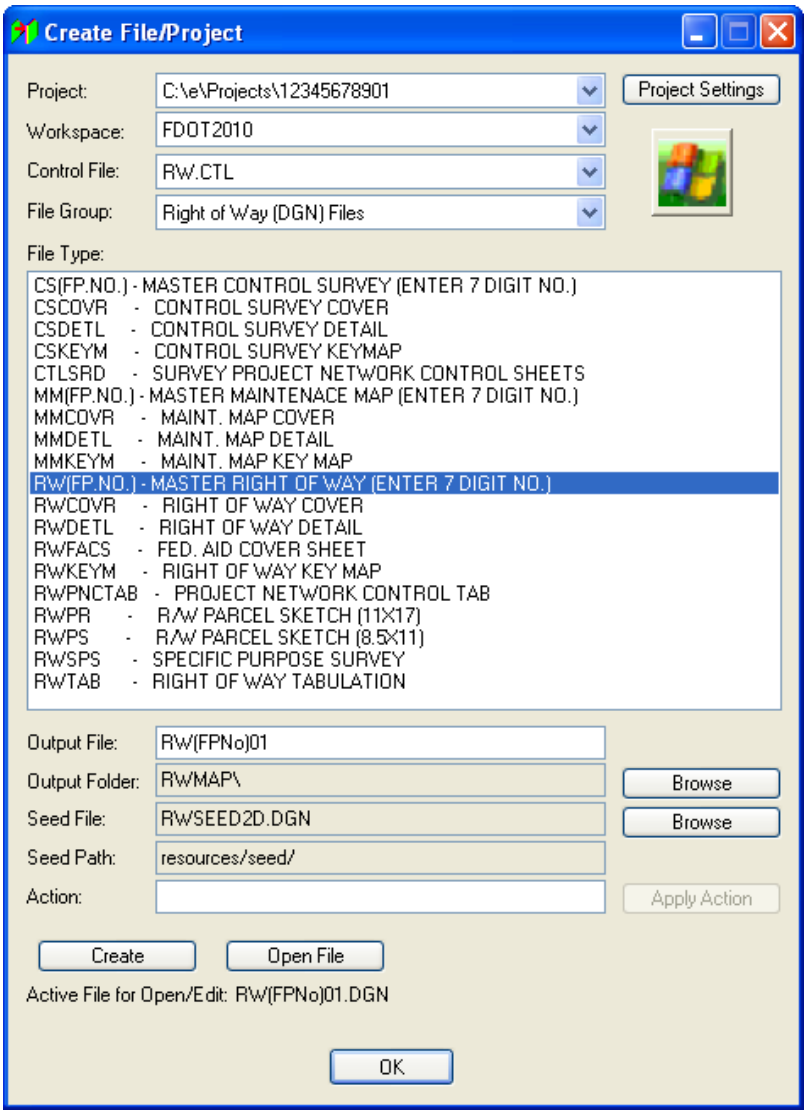
APPENDIX C

- The basics steps to create a new Right-of-Way design file are:
  1. Open the **Create File/Project** dialog from FDOT Menu.
  2. Select the control file.
  3. Select the *File Group*.
  4. Select the *File Type* to create
  5. Click the **Create** button

Note Clicking the **Create** button more than once will create multiple new DGN files. This is useful when the user will need more than one blank copy of a particular type of DGN file.

CREATE FILE / PROJECT DIALOG

The Create File/Project dialog should always be used to ensure that the files the user creates adhere to FDOT naming conventions and standards.



Note Once a DGN file has been created using **Create File/Project**, the **Open DGN** button will be available. Clicking the **Open DGN** button will open the newly created DGN file in MicroStation.

- **Project** — This is the path in which project files are created. Clicking the project settings button allows the user to select the project to use.

- **Control File** — The Load Control File button allows the user to select the control file to use. The control file sets all of the other information in the Create File/Project dialog. The control files are located in the C:\FDOTXXX\RESOURCES\Control_Files folder. There are five control files:

    1. GEOTECH.CTL for Geotechnical related files.
    2. MECHELEC.CTL for Mechanical and Electrical files.
    3. ROADWAY.CTL for Roadway related files.
    4. **RW.CTL for Right-of-Way related files.**
    5. STRUCTURES.CTL for Structures related files.

- **Output File, Output, File Folder, Seed File, Seed File Path** — The settings in these areas are all set by the control file, and by choosing the File Group and File Type.

- **File Group** — Each control file has several file groups to select from. Each group is a specific area of design. Choosing a file group loads the file types related to that group into the *File Type* area.

- **File Type** — Choosing a file type sets all of the settings for the *Output and Seed* section, including the name of the file to be created. If a file with the same name already exists, it is automatically incremented. The seed file and output folder will update automatically.

Note By choosing the correct Project, Control File, and File Type within the Create File/Project dialog; settings such as the Right-of-Way design file name and placement in the rwmap folder of the FDOT CADD Project are handled automatically for the user.

FDOT SEED FILES

Every MicroStation file uses another MicroStation file as a template for all of the settings and other information needed to create a drawing file. For the DOT's purposes, the seed files that are available are:

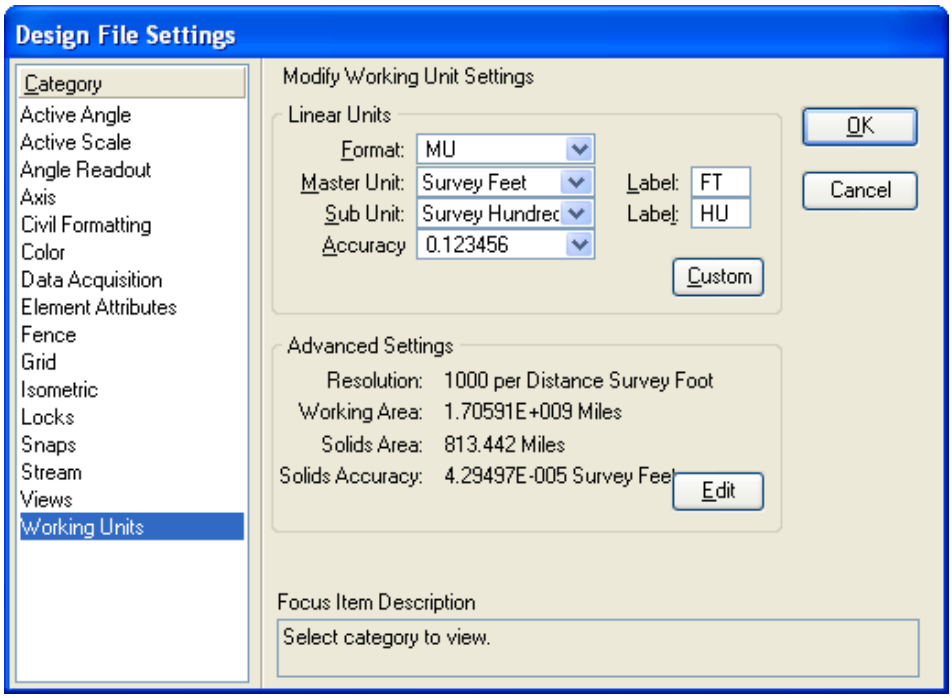
✓ FDOTSEED2D.DGN	Contains all of the settings for creating a 2D design file.
✓ FDOTSEED3D.DGN	Contains all of the setting for creating a 3D design file.
✓ FDOTSEED2D.DWG	Contains settings for creating ACAD files.
✓ FDOTSEEDKEYMAP.DGN	Contains settings for creating Key Maps.
✓ FDOTSEEDXS.DGN	Contains additional models setup for cross sections.
✓ RWSEED2D.DGN	Contains different unit settings.
✓ STRUCTURESSEED.DGN	Contains different unit settings.

 © 2015 FDOT

APPENDIX C

WORKING UNITS

Working units consists of controls that are used to set "real world" units of measurement for your design models. MicroStation recognizes Metric and English units, either of which may be selected from option menus. Additionally, the user can create custom units, by relating them to the standard units (Metric or English). Changing between the units used in a model makes no difference to the size of geometry in your model. Alternatively, changing the *Resolution* setting in the *Advanced* settings, does change the size of existing geometry in the model. In practice, the *Resolution* setting will rarely, if ever, have to be changed from the default.



Different Working Units can be assigned to different models, all contained in the one DGN file.

FDOT has provided seed files with settings to use standard working units according to agency specifications. When using the **Create/File Project** to create MicroStation files, the appropriate seed file is used to create each DGN file automatically.

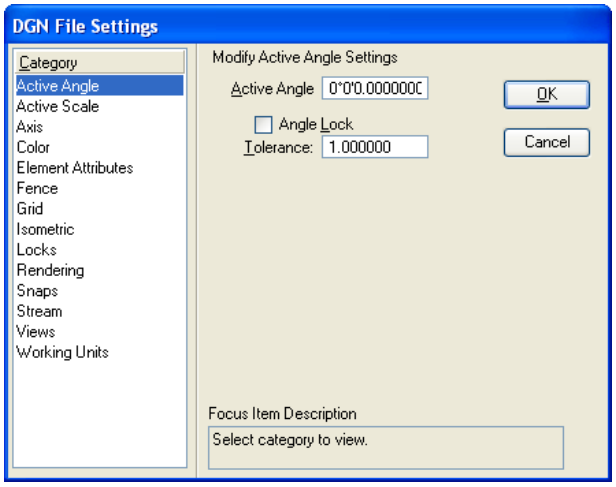
GLOBAL ORIGIN

The global origin for FDOT's standard seed files are set to an XY coordinate of 0, 0. The global origin can be relocated to specific coordinate values to create a custom coordinate system. When using the **Create/File Project** to create MicroStation files, the appropriate seed file is used to create each DGN file automatically and thus the global origin is set to FDOT specifications.

APPENDIX C

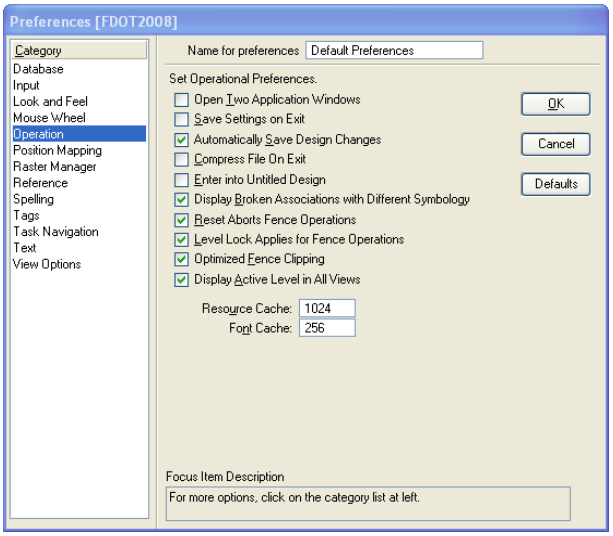
DESIGN FILE SETUP

When creating a new design, it is a good idea to review the design file parameters that control how the drawing will function. The most common file settings are found in the **DGN File Settings** dialog. This can be accessed from the **Settings** pull-down on the main MicroStation menu bar.



Note It is important to check the Design File Settings even if the user is sure that the proper seed was chosen when the MicroStation file was created, because some of the settings may have been changed by other users.

To ensure that the file settings are saved with the file, select the pull-down **(File > Save Settings)** or **(CTRL+F)** on the keyboard. This will preserve all the setting so that the next time the file is accessed it will reflect the current settings (including the last Views). The user can also select to have the settings saved automatically by selecting the **Save Settings on Exit** check box in the *Operation* category of the Preferences dialog. The Preferences dialog is accessed by using the pull-down **(Workspace > Preferences).**



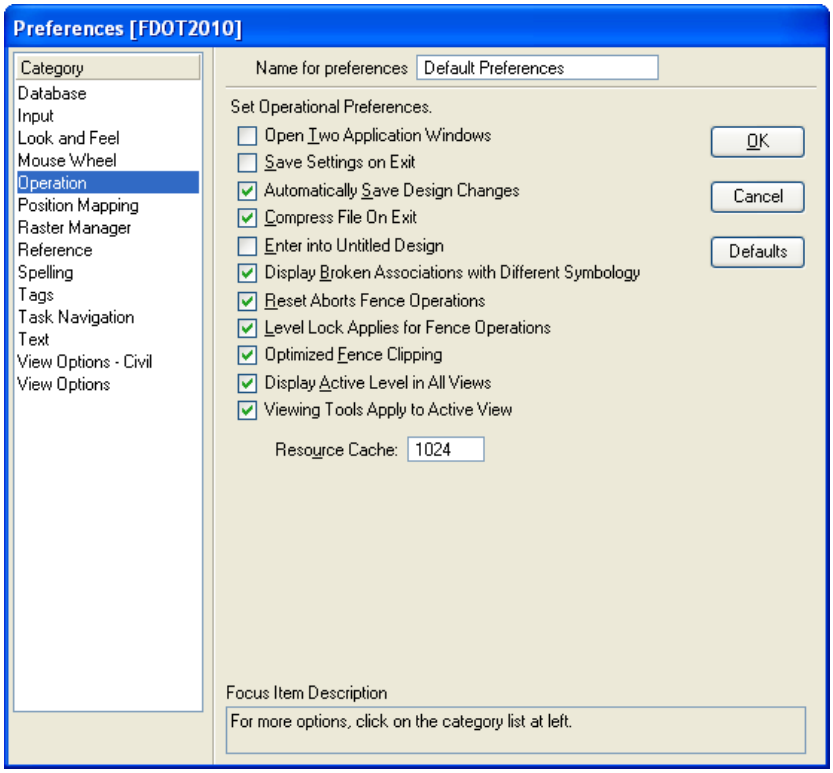
Note If the user selects **File > Save** when **Automatically Save Design Changes** is checked, the MicroStation UNDO buffer will be cleared preventing the user from undoing any operations previous to the save.

APPENDIX C

COMPRESSING DESIGN FILES

When the user deletes elements from a MicroStation design file, the elements no longer display in the design, but a record of the deleted elements remains in the design file. The *Compress Design* command removes the records, which reduce the size of the file. The undo buffer is cleared when the user compresses a design, so after compressing, the user will no longer be able to undo any previous operations.

It is best to use the *Compress Design* command at the end of an editing session. This can also be set to happen automatically upon exiting the MicroStation design. To make this setting access the MicroStation menu option: **Workspace** > **Preferences** > **Operation**.



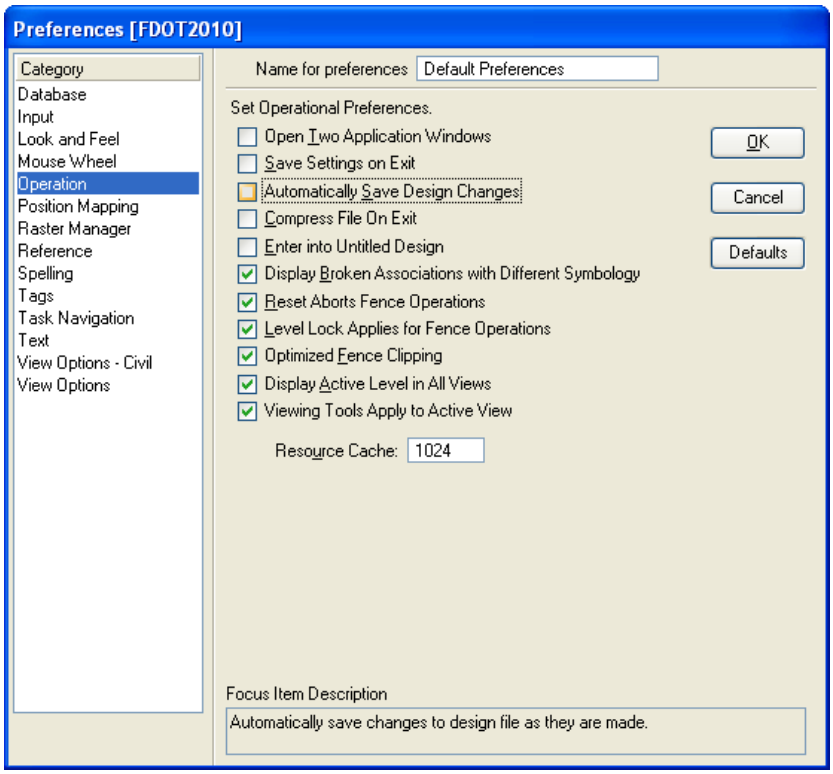
SAVING DRAWINGS

By default, MicroStation saves drawing changes automatically. MicroStation DGN files are saved in the DGN format, and AutoCAD DWG files are saved in the DWG format. The fact that the file is saved automatically is a very powerful feature of the software. This gives the user the security of knowing that in the event of a computer crash or power failure, the design changes to the last completed command will have been saved.

Note Only changes to design elements are saved automatically. Drawing settings must be saved using the **Save Settings** option.

APPENDIX C

The user can select to not have MicroStation save files automatically by clearing the check mark next to **Automatically Save Design Changes** in the *Operation* category of the Preferences dialog.



If automatic save is disabled, the user must manually save the file by clicking the **Save** tool in the Standard Toolbar. By choosing **File > Save As**, the user can save the file as a V8, V7, DWG, or DXF file format.

The *Save As* command can be used to create a backup of the design; however, the F3 key creates a backup file with the same name as the active design but with the extension *.BAK*. The backup file is created in the directory specified by the MS_BACKUP configuration variable.

To close any open drawings and return to the MicroStation Manager, select **File > Close**.

APPENDIX D - RIGHT OF WAY EXERCISES (Optional)

OBJECTIVES

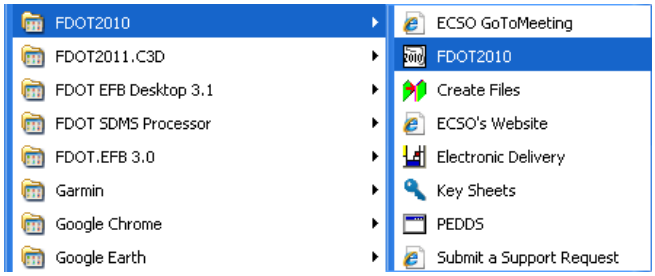
This appendix contains a variety of optional exercises for the FDOT RW Mapper to practice either during class (as time allows) or at a later time as a review of the lessons learned in the class.

The dataset for all chapter exercises as well as for this appendix will be provided to each student for their own use after the class upon request.

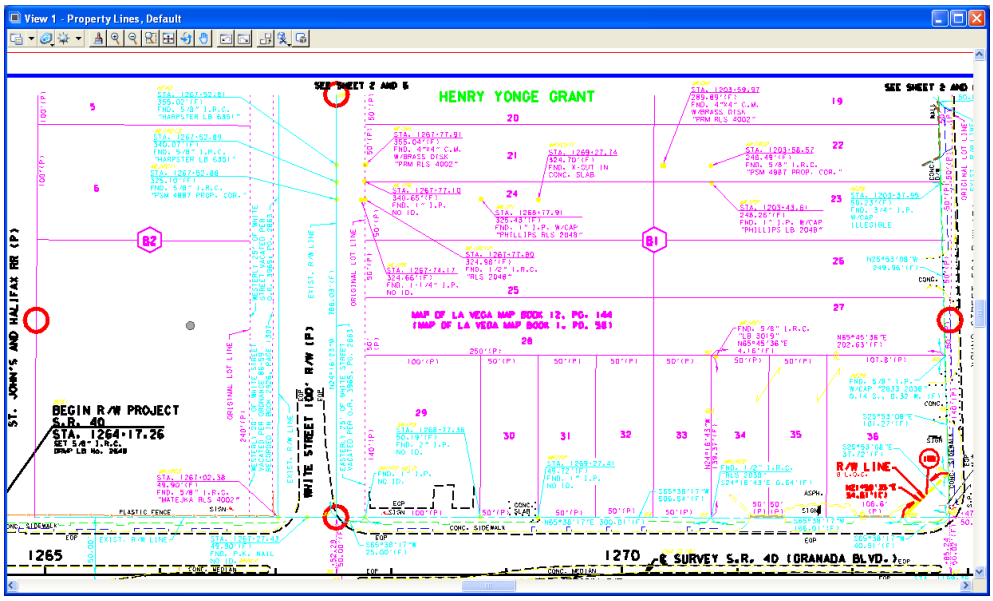
Appendix Exercise D 1 - Place Custom Line Style

➢ ***In this exercise the user will learn how to place a RW Custom Line Style.***

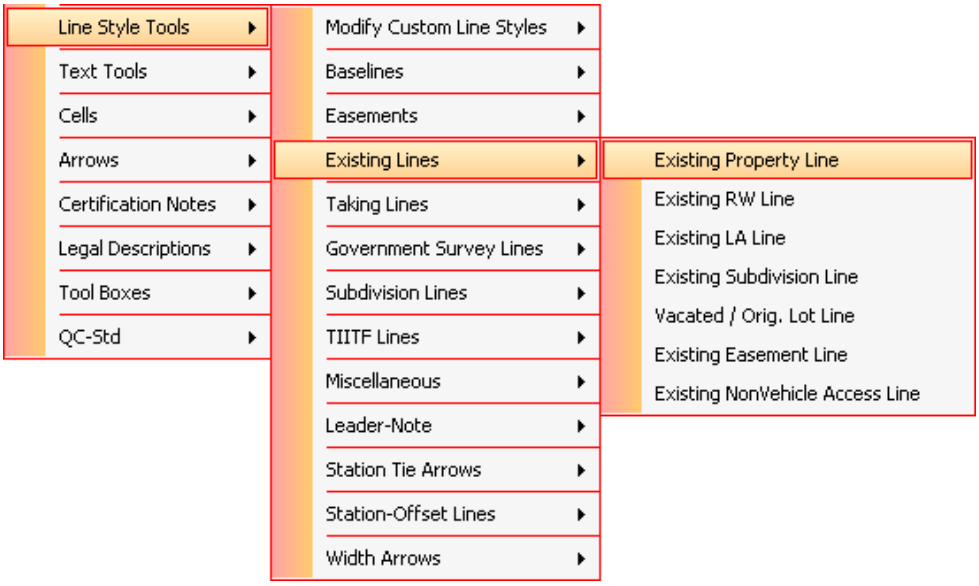
1. Open MicroStation using the FDOT2010 icon FDOT2010 on the Desktop. As an alternative, launch MicroStation from the FDOT2010 folder on the Windows Start menu.



2. Open the DGN file C:\E\Projects\9876543201*rwmap**rwdetl03.dgn* and go to **Utilities > Saved Views**. Open the *Saved View* **Property Lines**. The Right-of-Way map should display as shown.

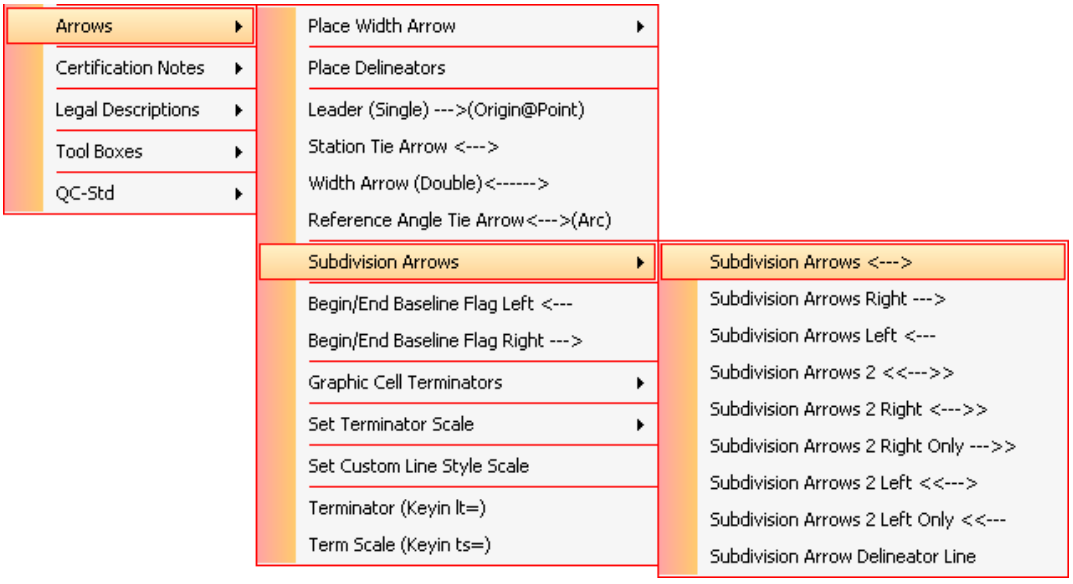


3. There is a missing *Existing Subdivision Line* between the two red circles on the East and West and a missing *Existing Property Line* between the red circles on the North and South. From the Right of Way FDOT Menu, select **Line Style Tools** > **Existing Lines** > **Existing Property Lines**.



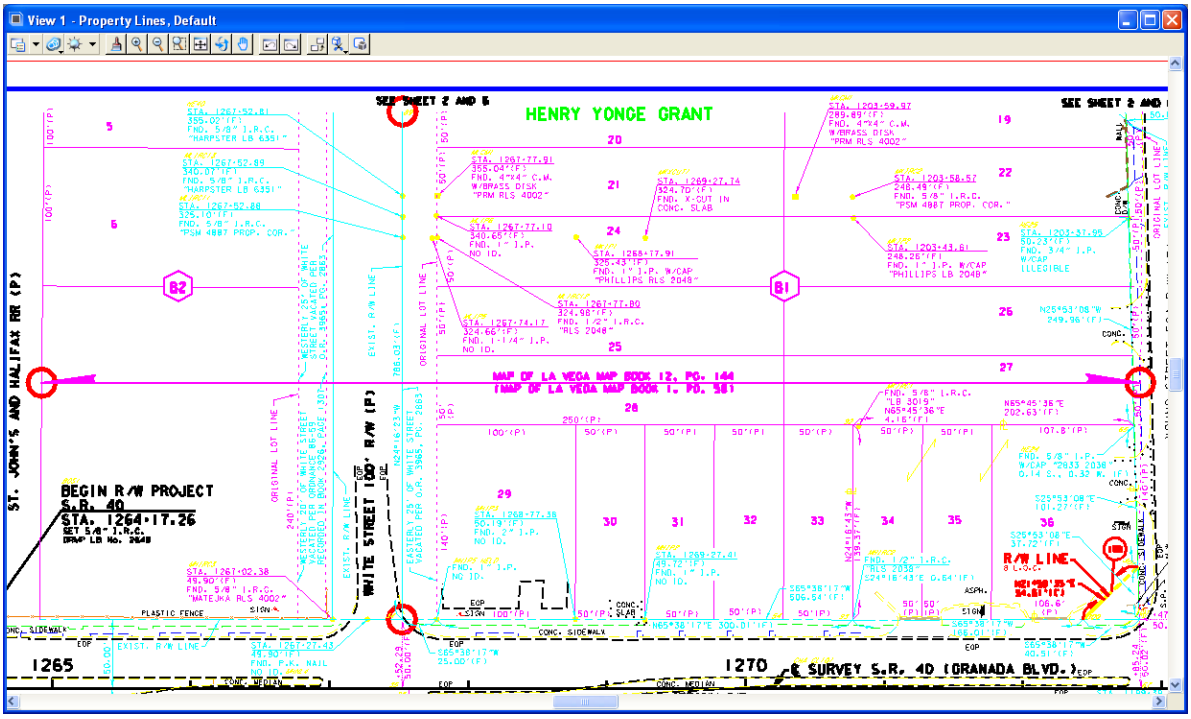
4. Use the MicroStation *Place Line* tool to place an **Existing Property Line** between the *North* and *South* red circles and then use the MicroStation *Delete* tool to remove the *North* and *South* red circles.

5. From the Right of Way FDOT Menu, select **Arrows** > **Subdivision Arrows** > **Subdivision Arrows** < -- >.



Note The user can also place an Existing Subdivision line without the Arrows from the **Line Style** menu. The **Arrows** method will place a Custom Line Style that includes the Arrows.

6. Use the MicroStation *Place Line* tool to place an **Existing Subdivision Line** between the *East* and *West* red circles and then use the MicroStation *Delete* tool to remove the *East* and *West* red circles. The Right-of-Way map should display as shown.

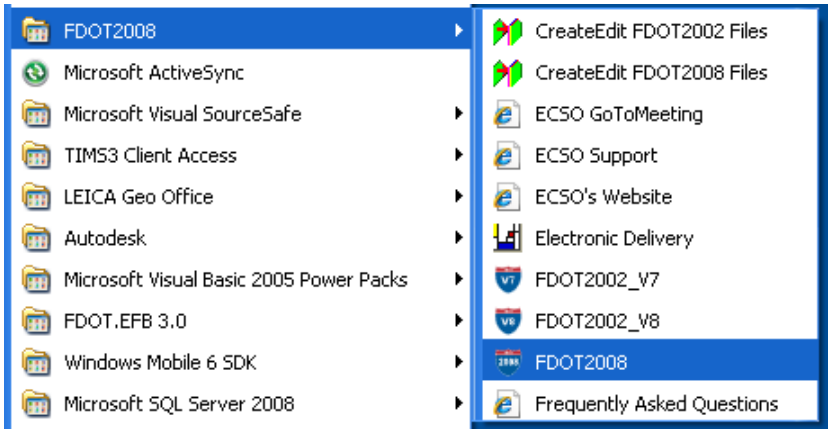


APPENDIX D

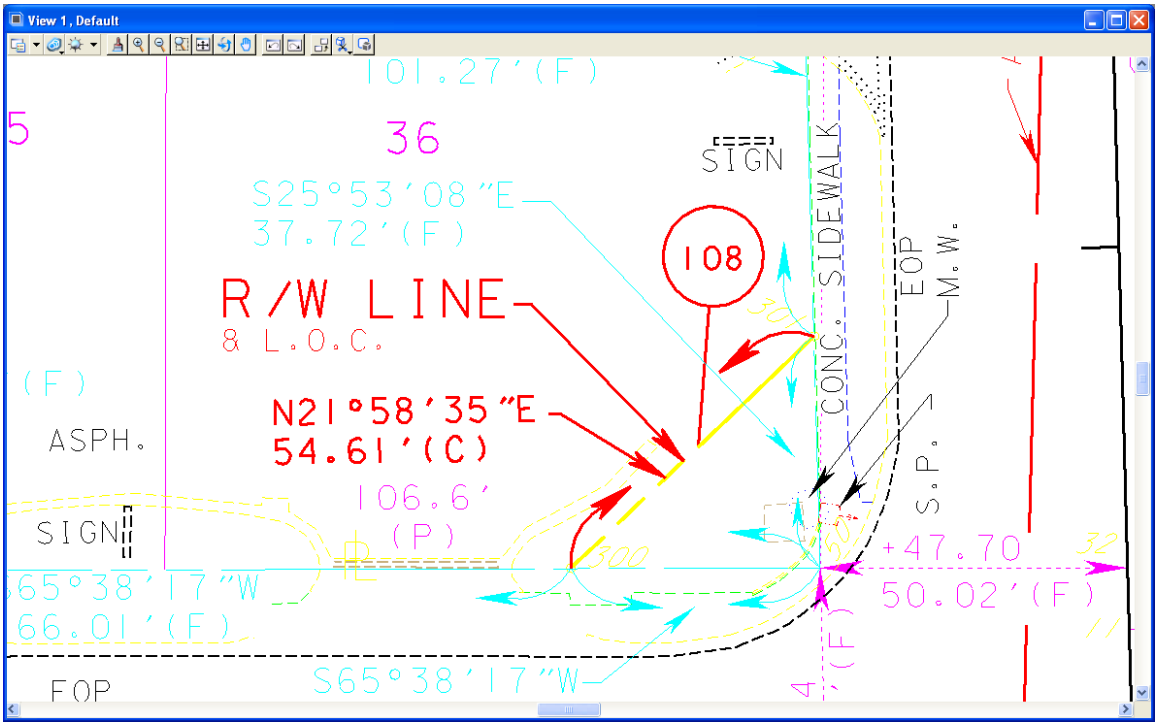
Appendix Exercise D 2 - Shift Custom Line Style

➢ ***In this exercise the user will learn how to use the RW Shift Custom Line Style Tool.***

1. Open MicroStation using the FDOT2010 icon FDOT2010 on the Desktop. As an alternative, launch MicroStation from the FDOT2010 folder on the Windows Start menu.

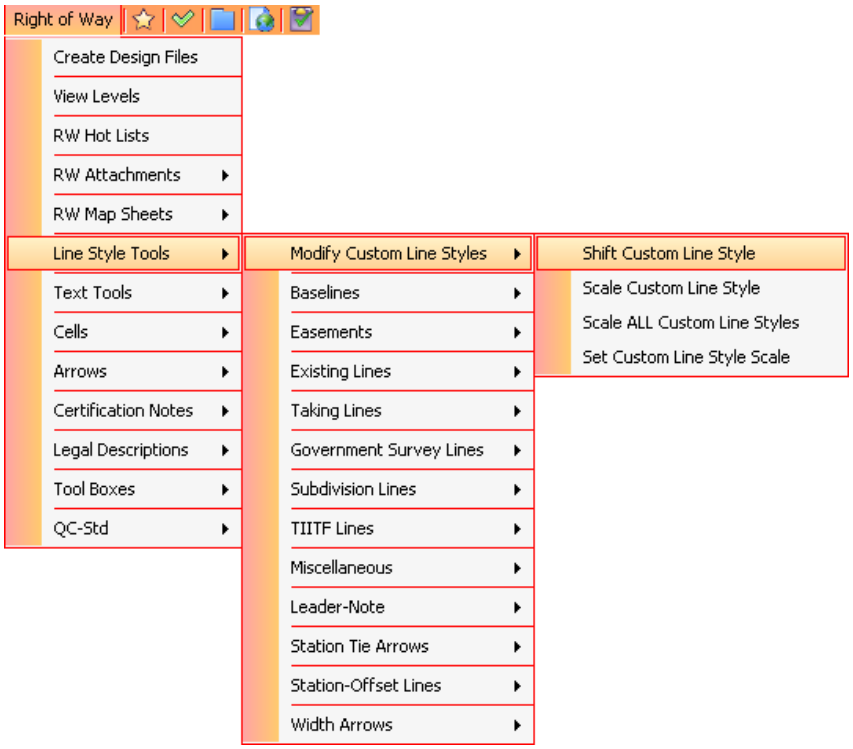


2. Open the DGN file C:\E\Projects\9876543201\rwmap*rwdetl03.dgn* and go to the *Saved View* **Shift**. The Right-of-Way map should display as shown next.

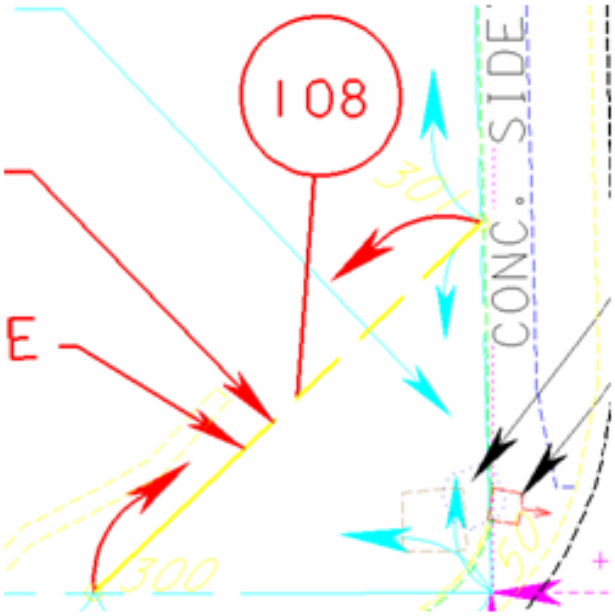


© 2015 FDOT

3. Select **Line Style Tools** > **Modify Custom Line Styles** > **Shift Custom Line Style** from the Right of Way FDOT Menu.



4. Left-click on the yellow **Right-of-Way Line** and move the cursor to shift the Custom Line Style to an display similar to that shown.



5. Left-click again to accept the changes to the Custom Line Style. If time allows, use the *Shift Custom Line Style* tool to modify other areas of the Right-of-Way map.

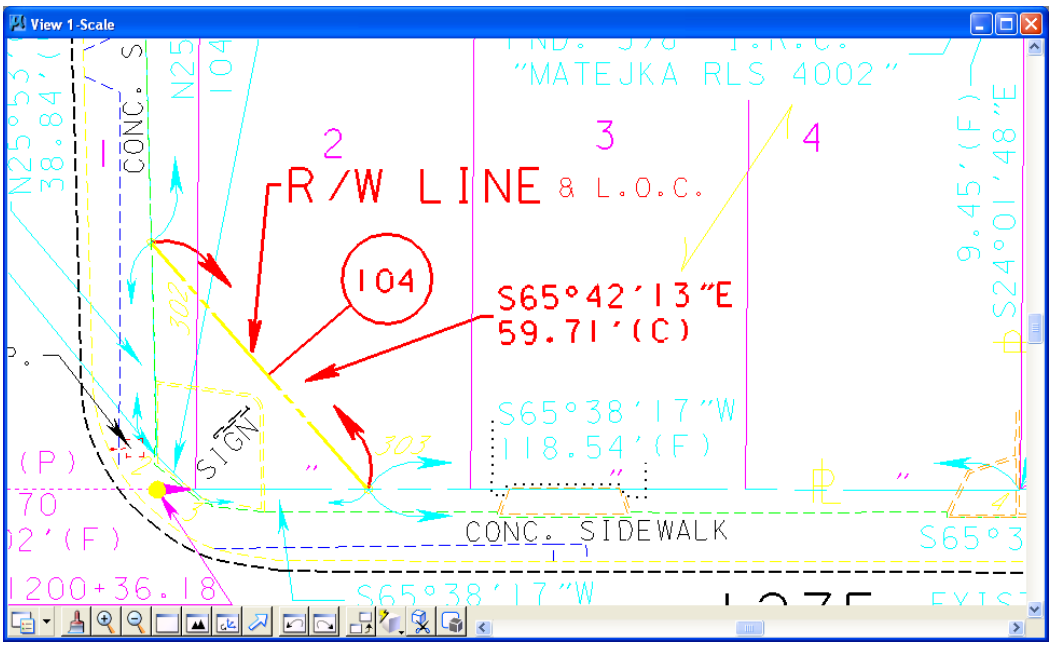
 © 2015 FDOT

APPENDIX D

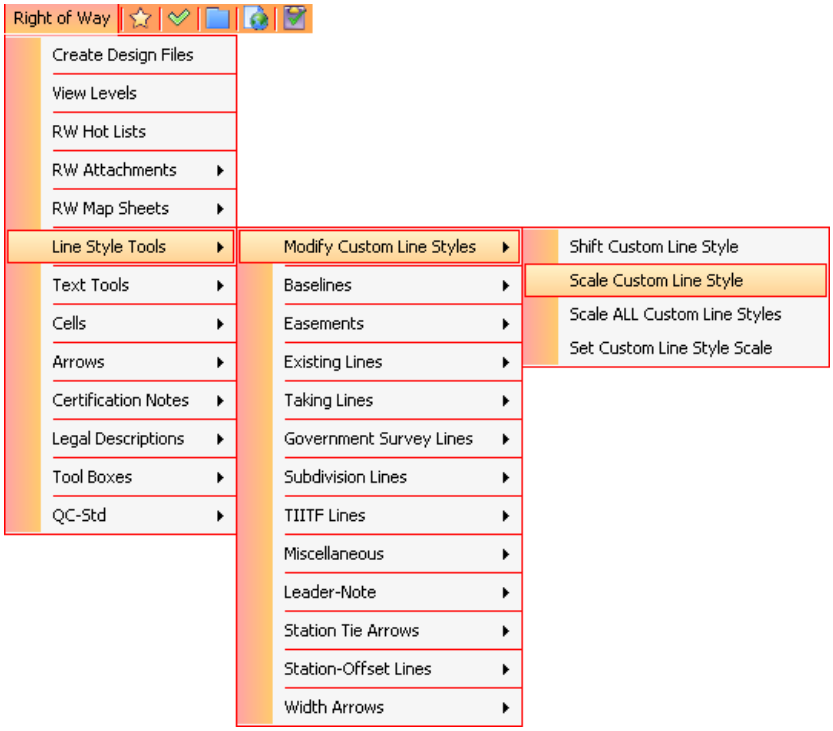
Appendix Exercise D 3 - Scale Custom Line Style

➢ ***In this exercise the user will learn how to use the RW Scale Custom Line Style Tool.***

1. Continue in the C:\E\Projects\9876543201\rwmap*RWDETL03.dgn* file and open the *Saved View* **Scale**. The Right-of-Way map should display as shown next.

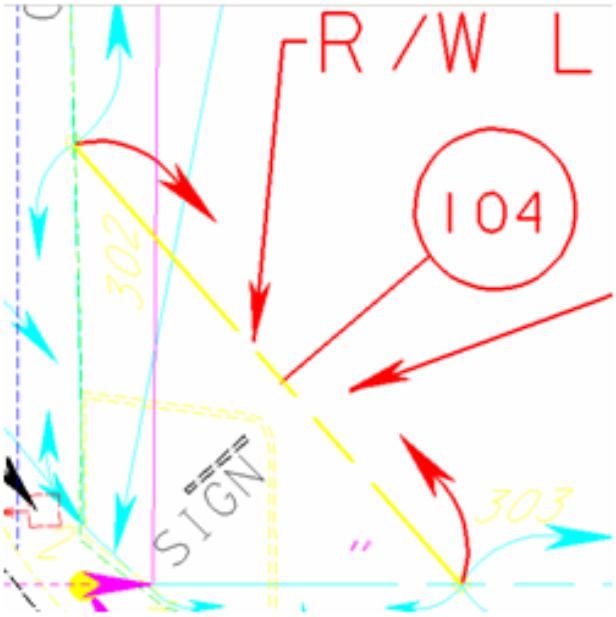


2. Select **Line Style Tools** > **Modify Custom Line Styles** > **Scale Custom Line Style** from the Right of Way FDOT Menu.



© 2015 FDOT

3. Left-click on the yellow **Right-of-Way Line** and move the cursor to scale the Custom Line Style to a display similar to as shown.



4. Left-click again to accept the changes to the Custom Line Style. If time allows, use the *Scale Custom Line Style* tool to modify other areas of the Right-of-Way map.

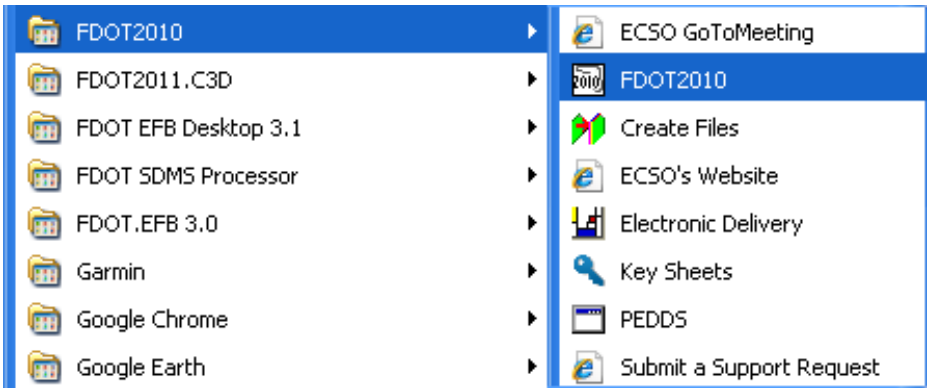
© 2015 FDOT

APPENDIX D

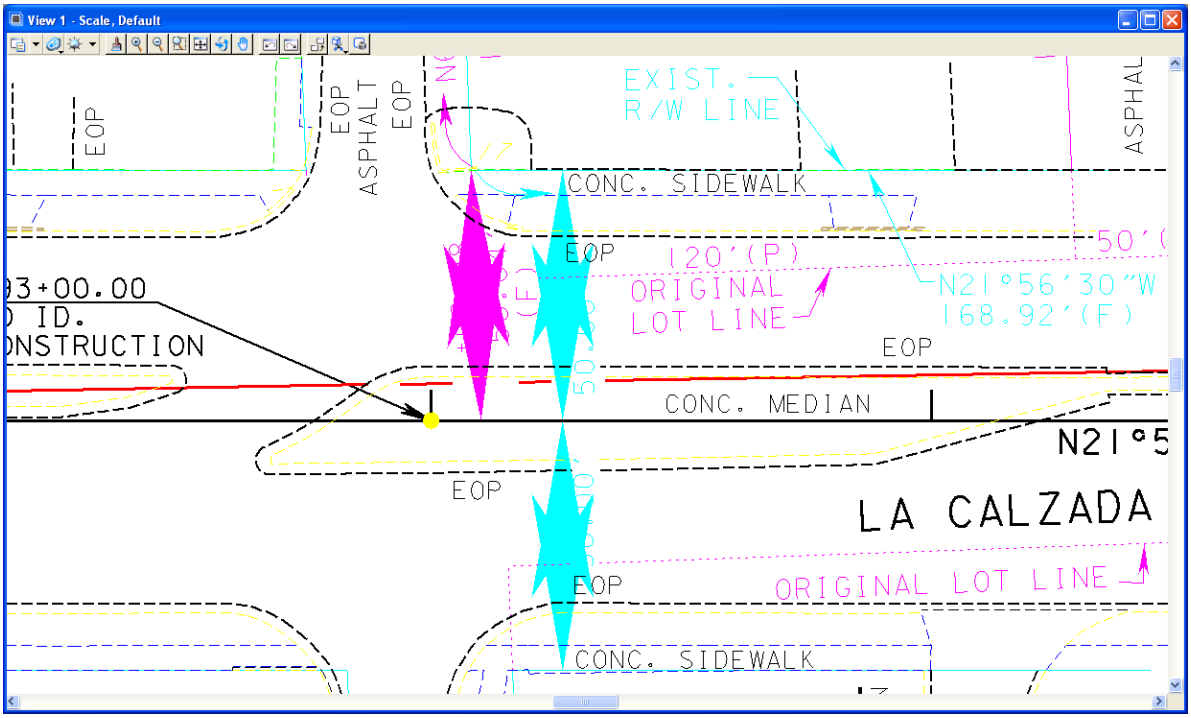
Appendix Exercise D 4 - Scale ALL Custom Line Styles

- ***In this exercise the user will learn how to use the RW Scale ALL Custom Line Styles Tool.***

1. Open MicroStation using the FDOT2010 icon FDOT2010 on the Desktop. As an alternative, launch MicroStation from the FDOT2010 folder on the Windows Start menu.



2. Open the DGN file C:\E\Projects\9876543201\rwmap*rwdetl05.dgn* and open the *Saved View* **Scale**. The Right-of-Way map should display as shown below. The *Custom Line Style Scale* needs to be changed from **1" = 200'** to **1" = 40'** for all Custom Line Styles in the file.

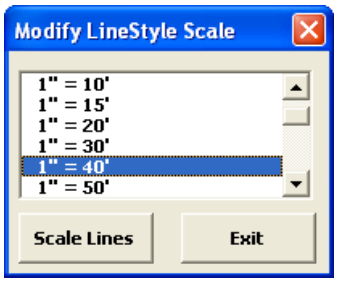


3. From the Right of Way Menu, select **Line Style Tools > Modify Custom Line Styles > Scale ALL Custom Line Styles**.

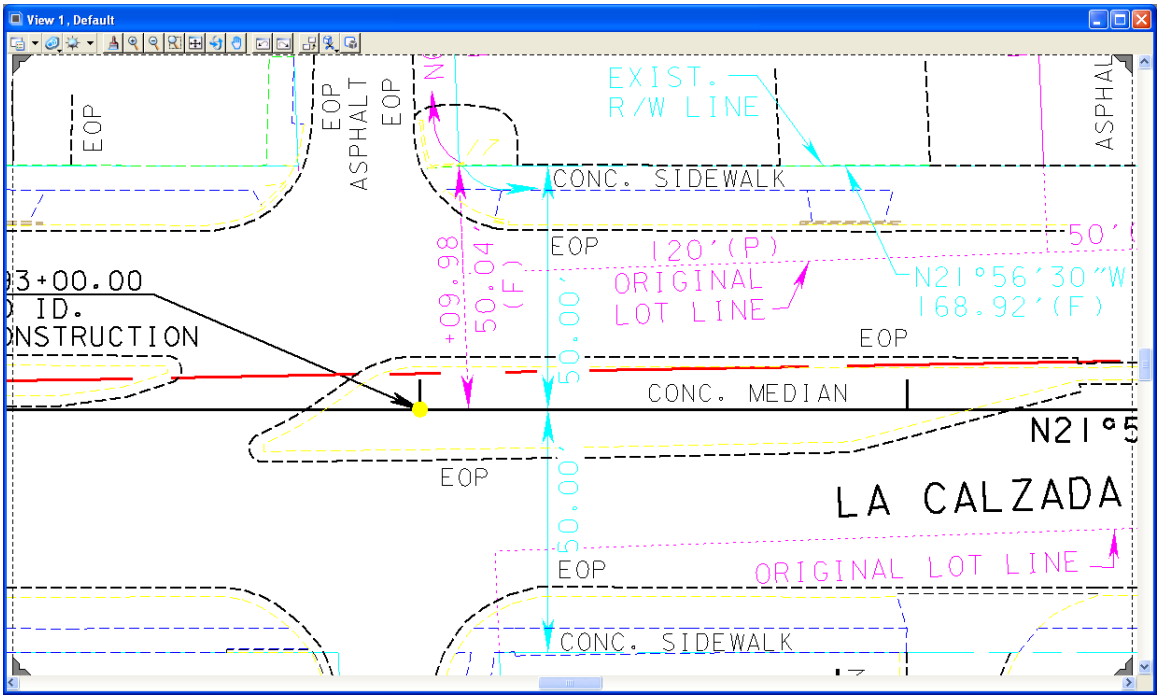
© 2015 FDOT

APPENDIX D

4. The Modify LineStyle Scale dialog displays as shown. Select the *New CLS Scale* of **1"=40** and click **Scale Lines.**



5. The Right-of-Way map will display as shown.

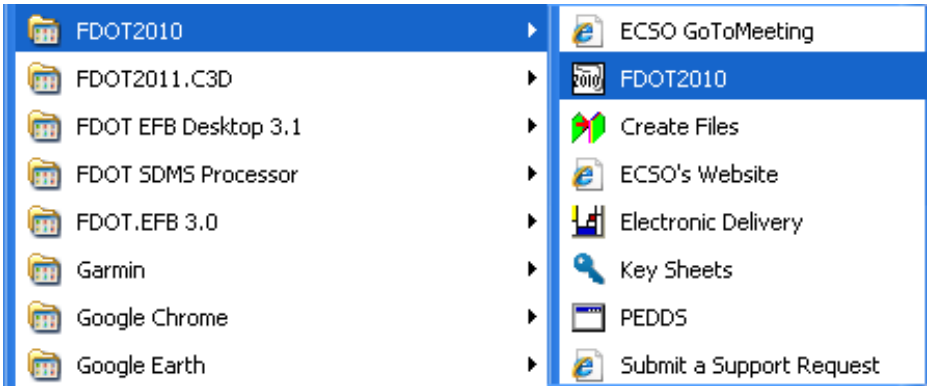


APPENDIX D

Appendix Exercise D 5 - Using RW Text Tools

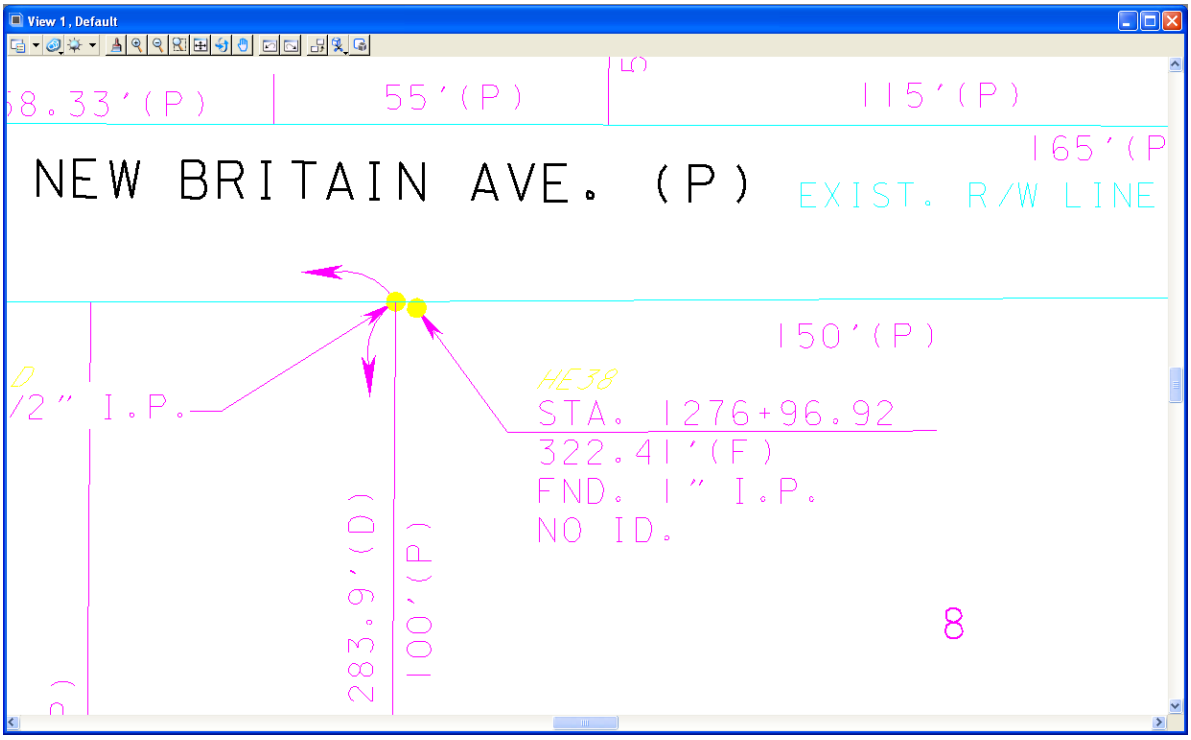
➢ ***In this exercise the user will learn how to use the RW Text Tools.***

1. Open MicroStation using the FDOT2010 icon FDOT2010 on the Desktop. As an alternative, launch MicroStation from the FDOT2010 folder on the Windows Start menu.

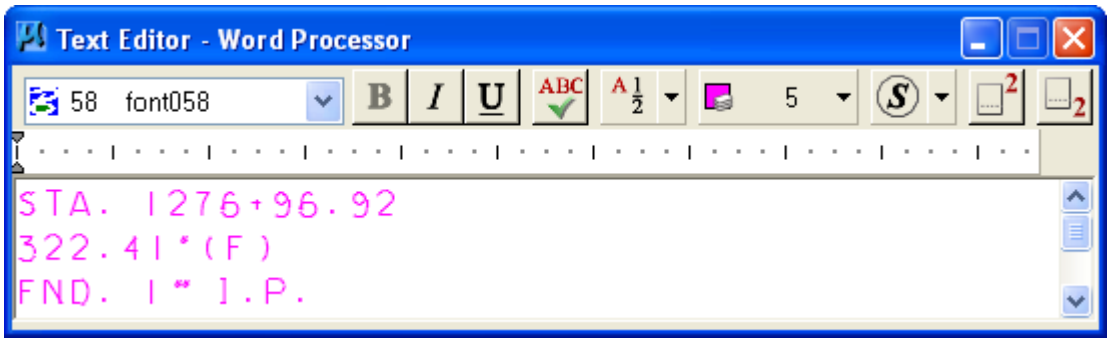


2. Open the DGN file C:\E\Projects\9876543201\rwmap*RWDETL04.dgn*, set the *Plot Scale* to **1" = 40'**, and the *text size* to **1" = 40'** using the Right of Way FDOT Menu.

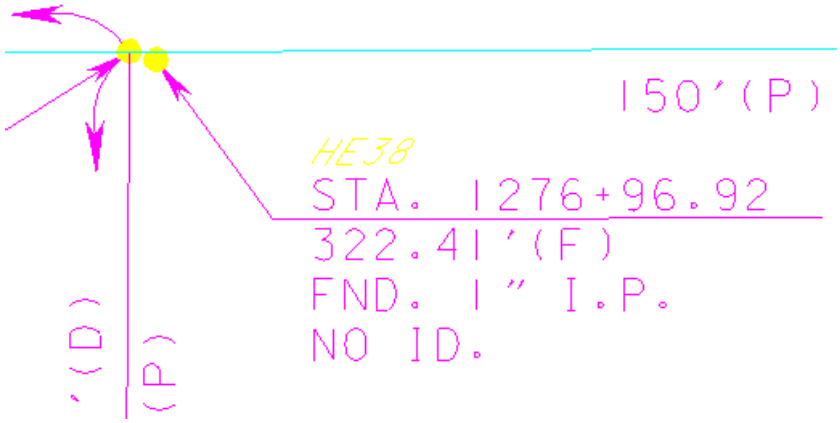
3. Go to the *Saved View* **Station**. The Right-of-Way map should display as shown.



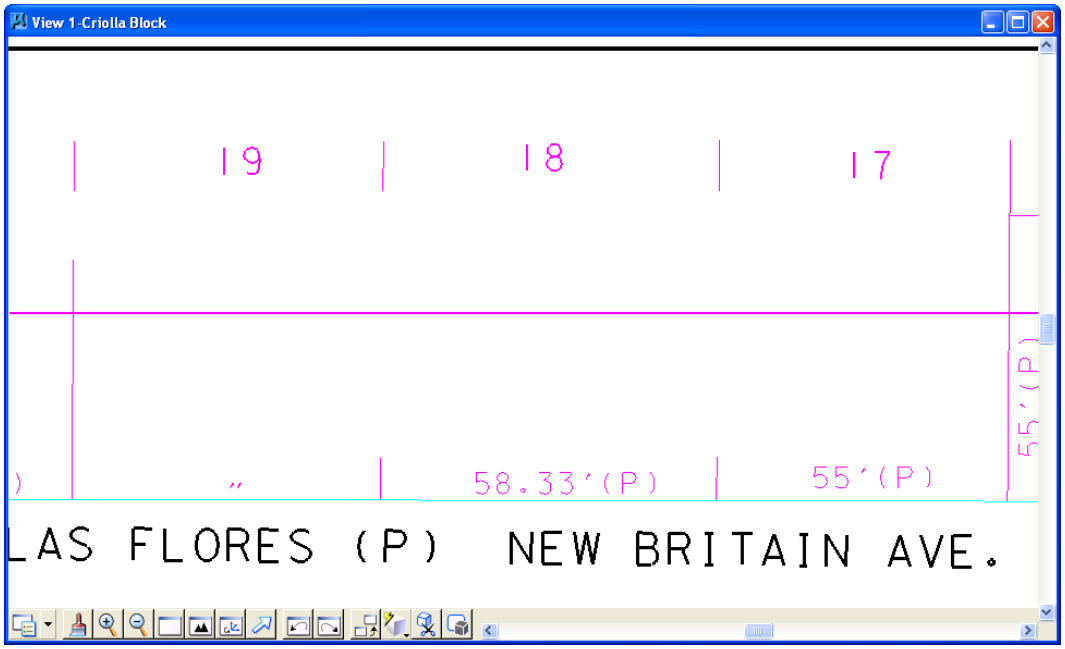
4. Using the MicroStation *Select* tool, double-click on the *Station Text*. The *Station value* should be "**1276+96.92**" not "**1276+69.92**". Edit the *Station* Text as shown.



5. Place a **Data Point** inside *View 1* to accept the change.

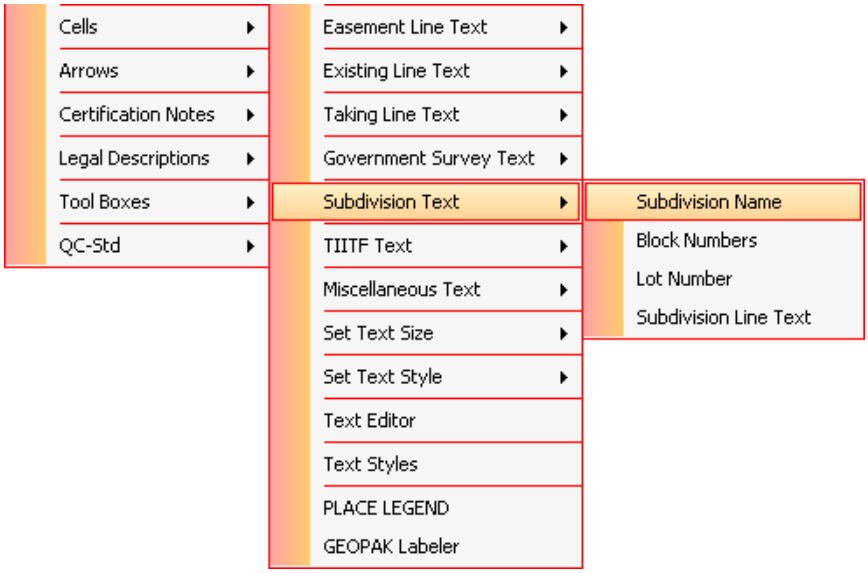


6. Open the *Saved View* **Criolla Block**. The Right-of-Way map should display as shown.

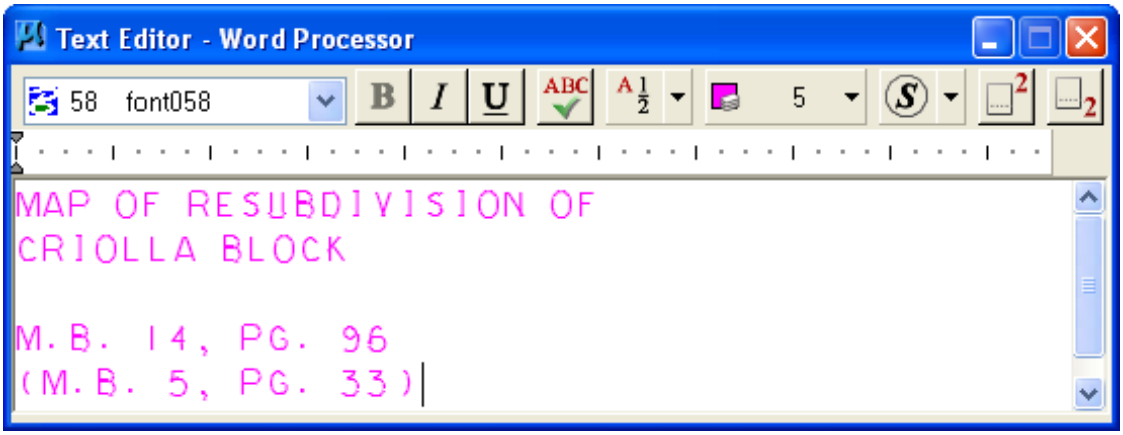


 © 2015 FDOT

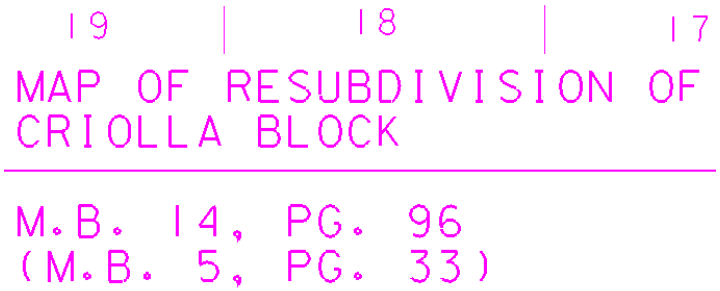
7. Select **Text Tools > Subdivision Text > Subdivision Name** from the Right of Way FDOT Menu. This will set the correct *Text Style* for the Subdivision Name. The *Text Style* will ensure that all symbology will be correct in the Right-of-Way Map.



8. The Text "**MAP OF RESUBDIVISION OF CRIOLLA BLOCK M.B. 14, PG. 96 (M.B. 5, PG. 33)**" needs to be placed into the Text Editor as shown.



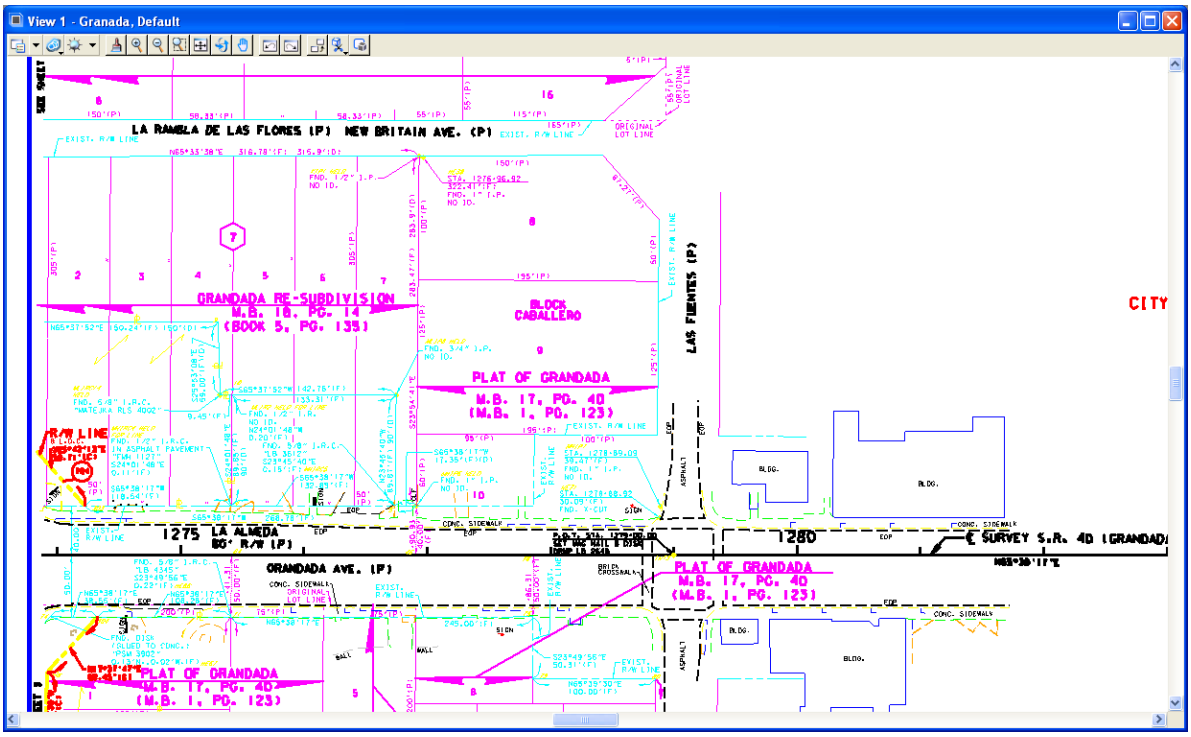
9. Place the *Subdivision Name Text* as shown.



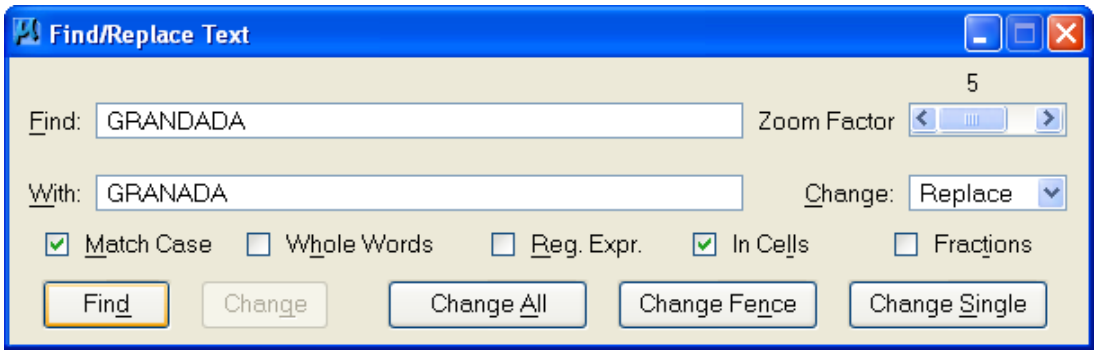
© 2015 FDOT

APPENDIX D

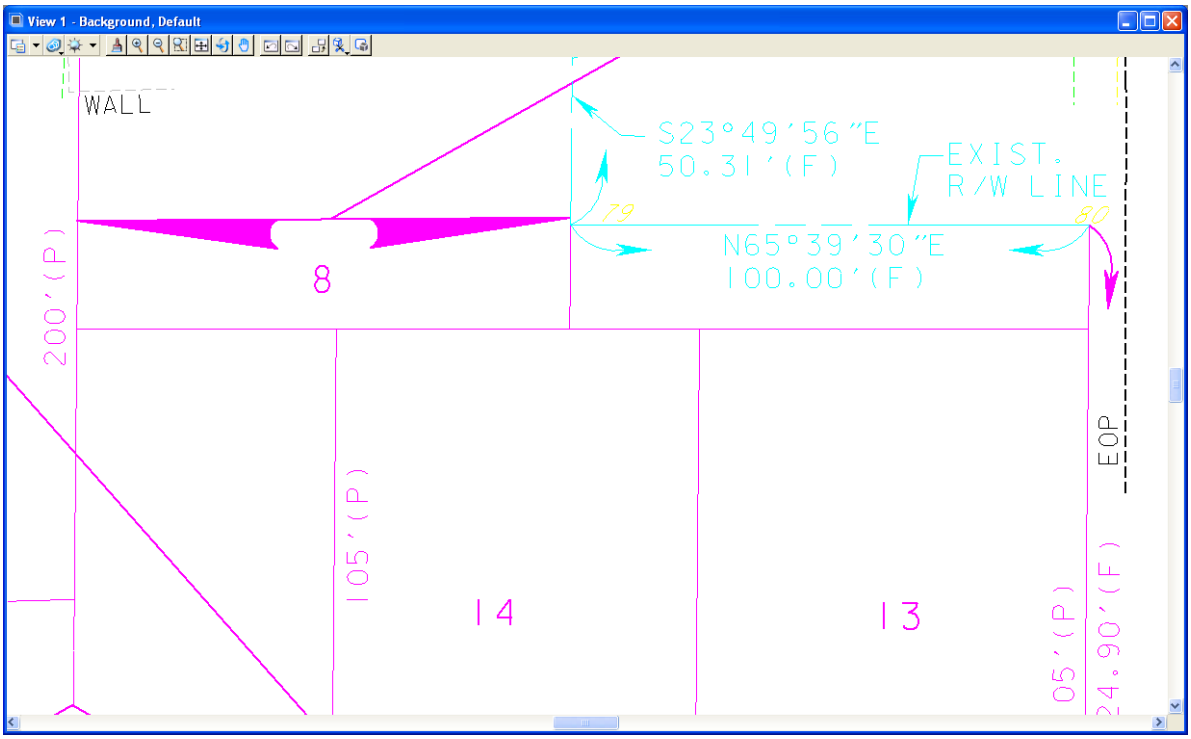
10. Open the *Saved View* **Granada**. The Right-of-Way map should display as shown.



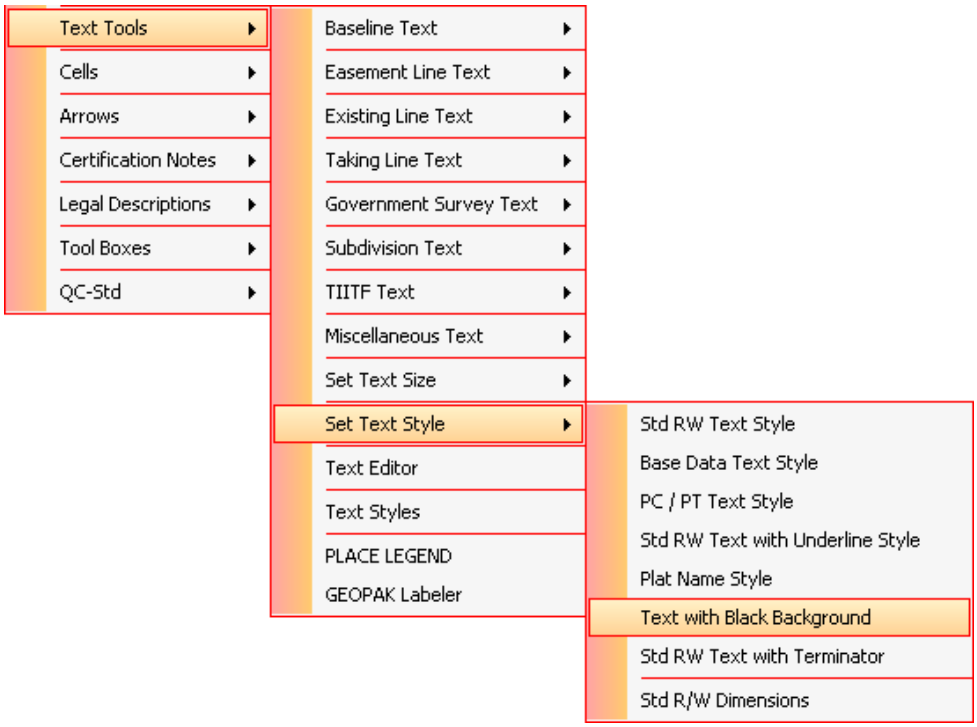
11. The *GRANADA Subdivision* has been incorrectly labeled "**GRANDADA**". From the MicroStation menu, select **Edit > Find/Replace Text**. Match the settings as shown and click **Change All**.



12. Open the *Saved View* **Background**. The Right-of-Way map should display as shown on the next page.

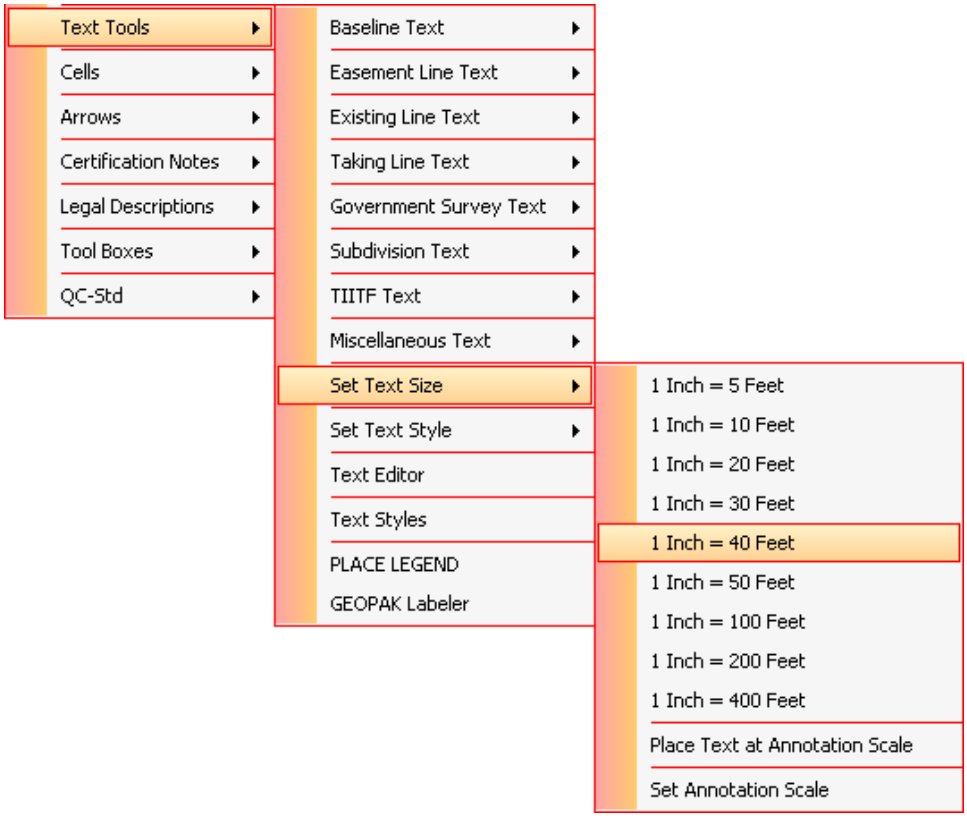


13. Select **Text Tools** > **Set Text Style** > **Text with Black Background** from the Right of Way FDOT Menu as shown

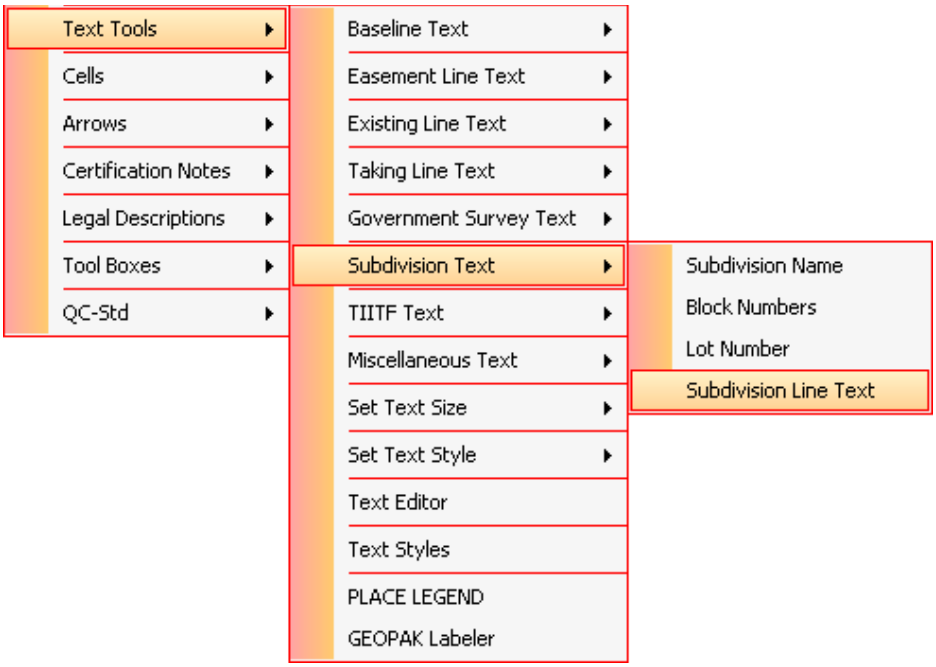


 © 2015 FDOT

14. Select **Text Tools** > **Set Text Size** > **1Inch = 40 Feet** from the Right of Way FDOT Menu as shown.

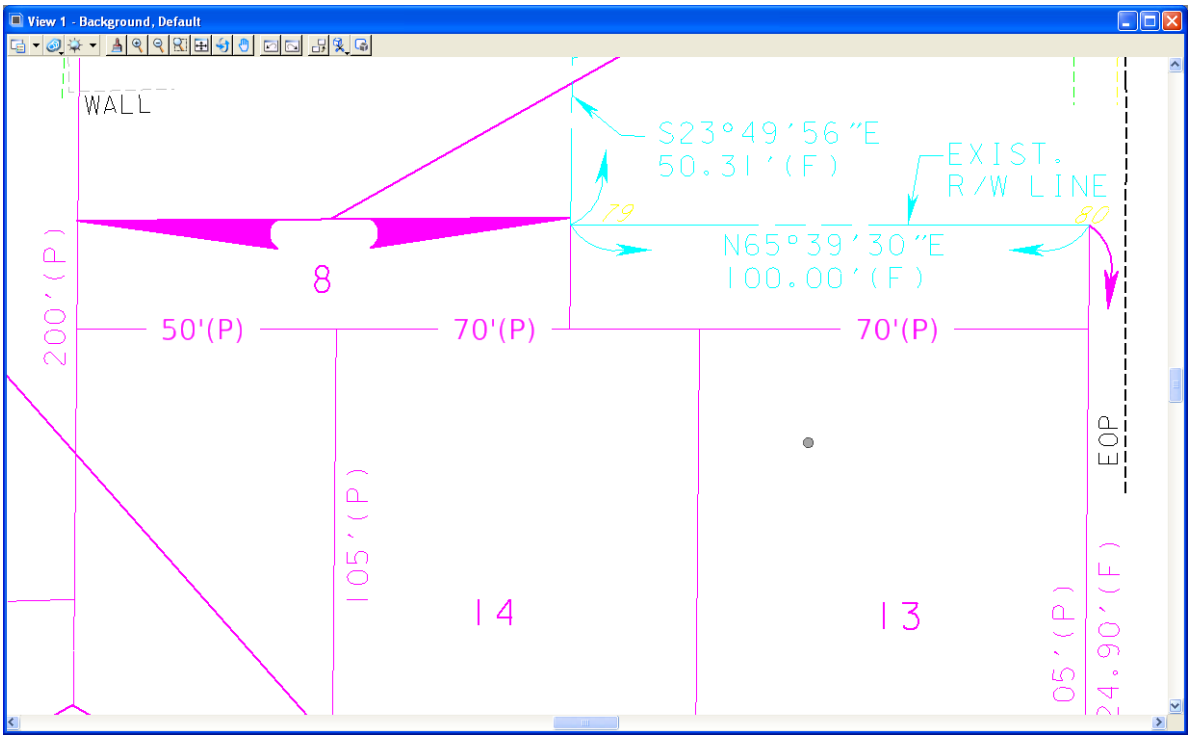


15. Select **Text Tools** > **Subdivision Text** > **Subdivision Line Text** from the Right of Way FDOT Menu as shown.



16. Place the *Text* **50' (P)**, **70' (P)**, and **70' (P)** as shown next.

APPENDIX D



© 2015 FDOT

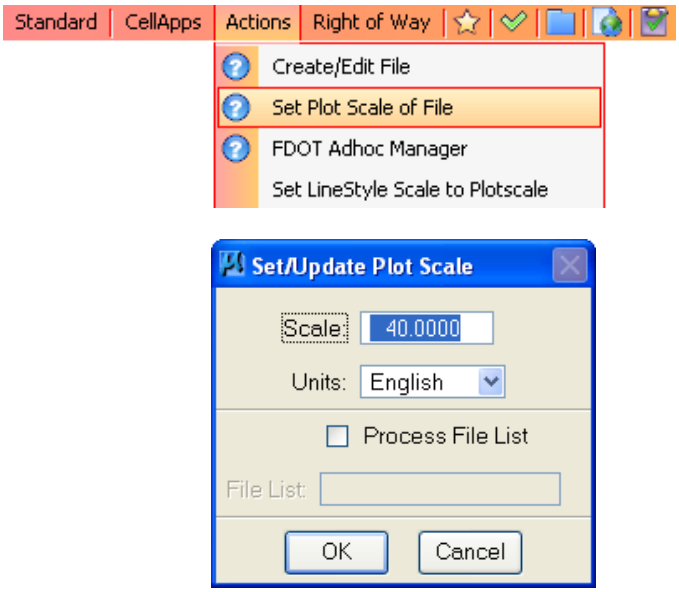
APPENDIX D

Appendix Exercise D 6 - Using RW Cell Tools

➢ ***In this exercise the user will learn how to use the RW Cell Tools.***

1. Open MicroStation using the FDOT2010 icon FDOT2010 on the Desktop. As an alternative, launch MicroStation from the FDOT2010 folder on the Windows Start menu.

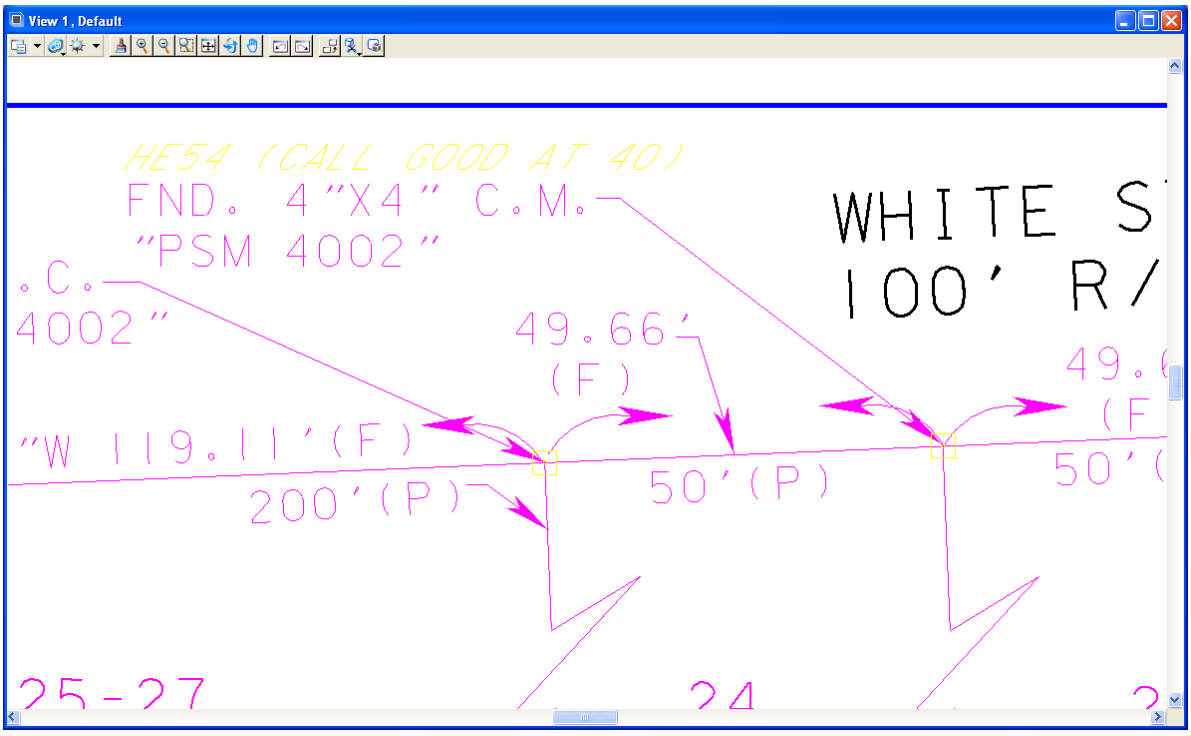
2. Open the DGN file C:\E\Projects\98765432101\rwmap*rwdetl07.dgn*, set the *Plot Scale* to **1" = 40'** as shown using the Right of Way FDOT Menu.



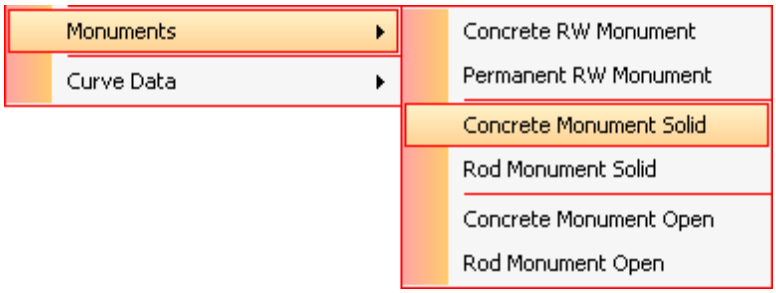
3. Set the *Cell Scale* to **1" = 40'** using the Right of Way FDOT Menu as shown.

4. Go to the *Saved View* **CM**. The Right-of-Way map should display as shown next.

APPENDIX D



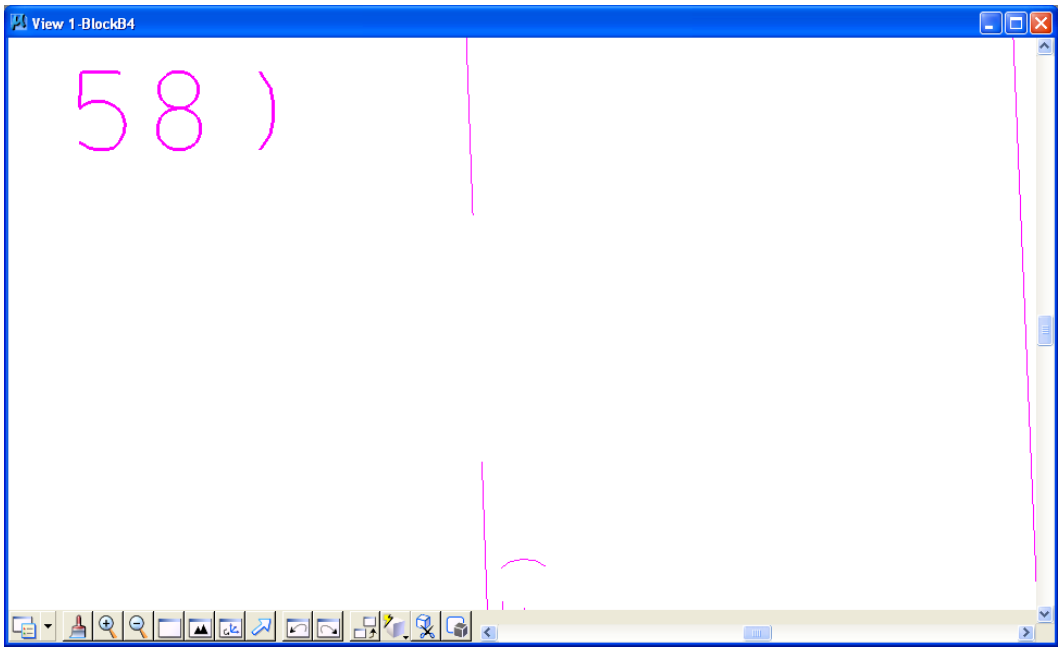
5. Use the MicroStation *Delete* tool to remove the cell for the **4"X4" C.M.** then, select **Cells** > **Monuments** > **Concrete Monument Solid** cell from Right of Way FDOT Menu as shown next.



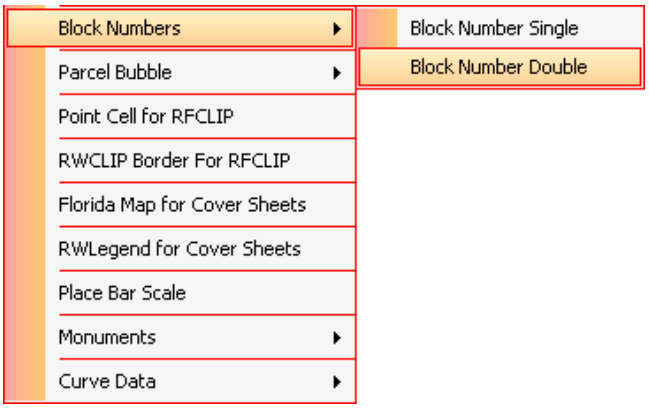
6. Use the MicroStation *Snap* feature to place the **Concrete Monument Solid** in the location previously used for the *Rod Monument Open* cell as shown.

© 2015 FDOT

7. Go to the *Saved View* **BlockB4**. The Right-of-Way map should display as shown next.



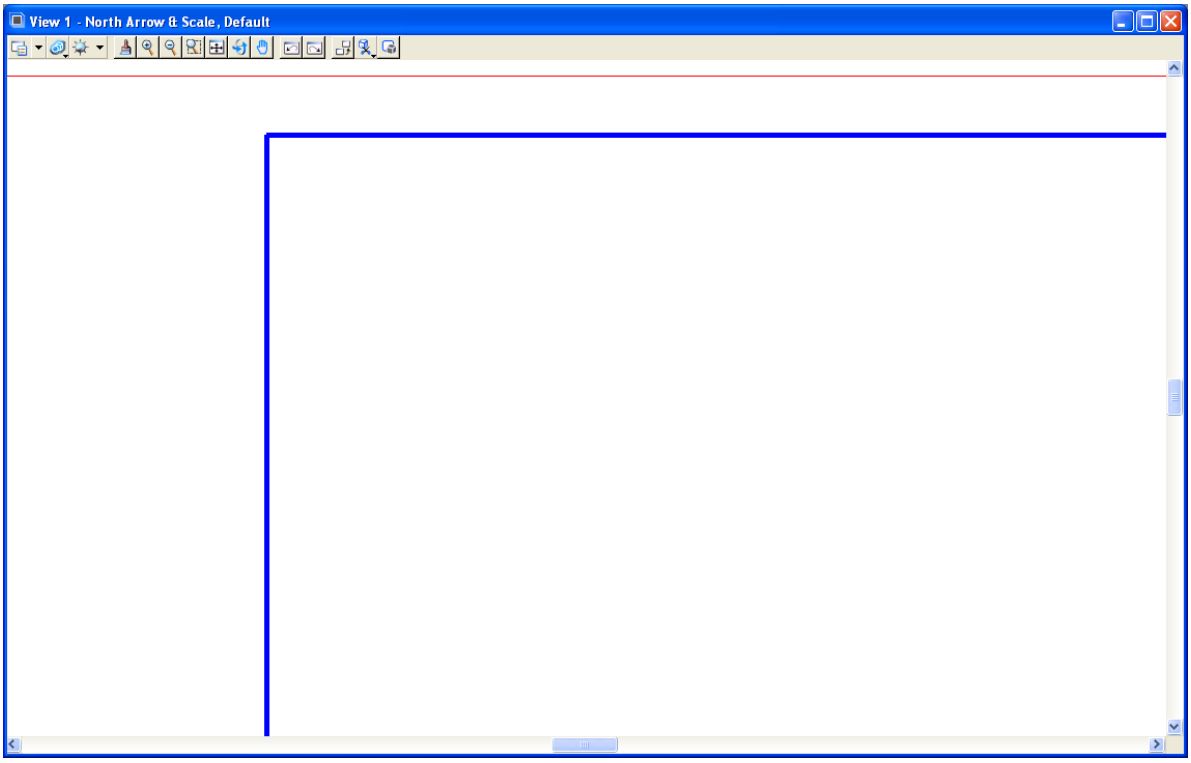
8. From the Right of Way FDOT Menu, select **Cells** > **Block Numbers** > **Block Number Double** as shown.



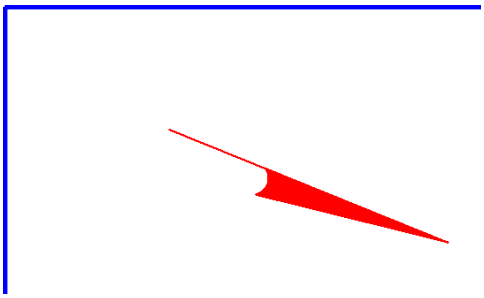
9. Place the **Block Number Double** cell as shown.

10. Use the MicroStation **Enter Single Enter-Data Field** icon from the *Text* toolbar to enter the *Data Field* to read "**B4**" as shown next.

11. Go to the *Saved View* **North Arrow & Scale**. The Right-of-Way map should display as shown next.

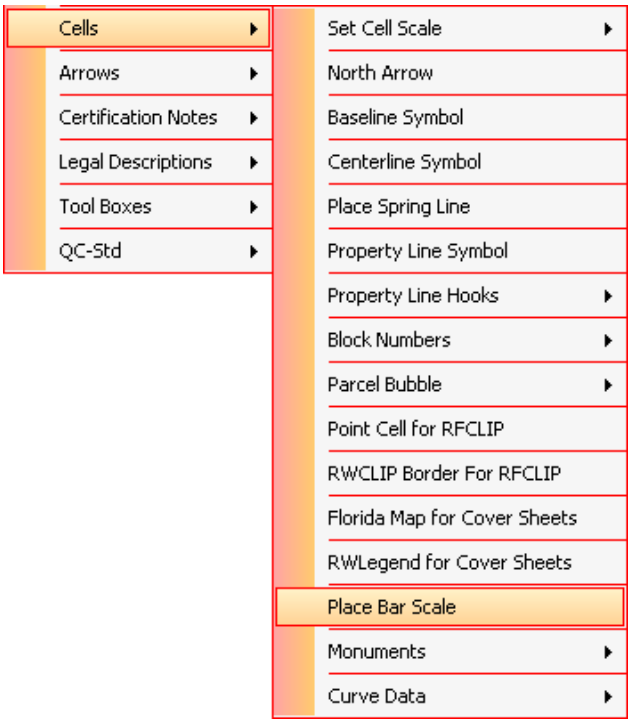


12. Using the MicroStation *Place Cell* tool, match the settings shown below and place the *cell* **Noarr** into the Right-of-Way map. Be sure to set the *Active Angle* to **248° 00' 00".**

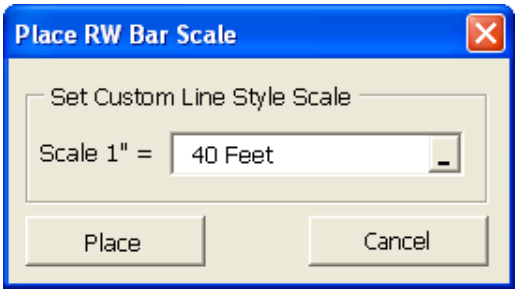


© 2015 FDOT

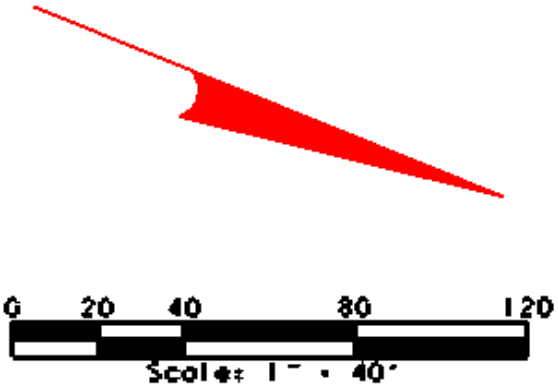
13. Select **Cells** > **Place Bar Scale** from the Right of Way FDOT Menu.



14. Select **40 FEET** from the *Scale 1"* pull down option and click **Place**.



15. Place the **Bar Scale** into the Right-of-Way map as shown next.



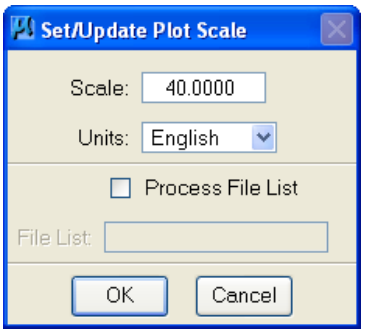
APPENDIX D

Appendix Exercise D 7 - Using RW Arrow Tools

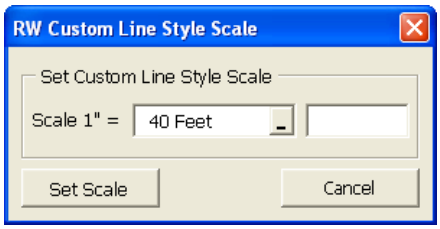
➢ ***In this exercise the user will learn how to use the RW Arrow Tools.***

1. Open MicroStation using the FDOT2010 icon FDOT2010 on the Desktop. As an alternative, launch MicroStation from the FDOT2010 folder on the Windows Start menu pen MicroStation.

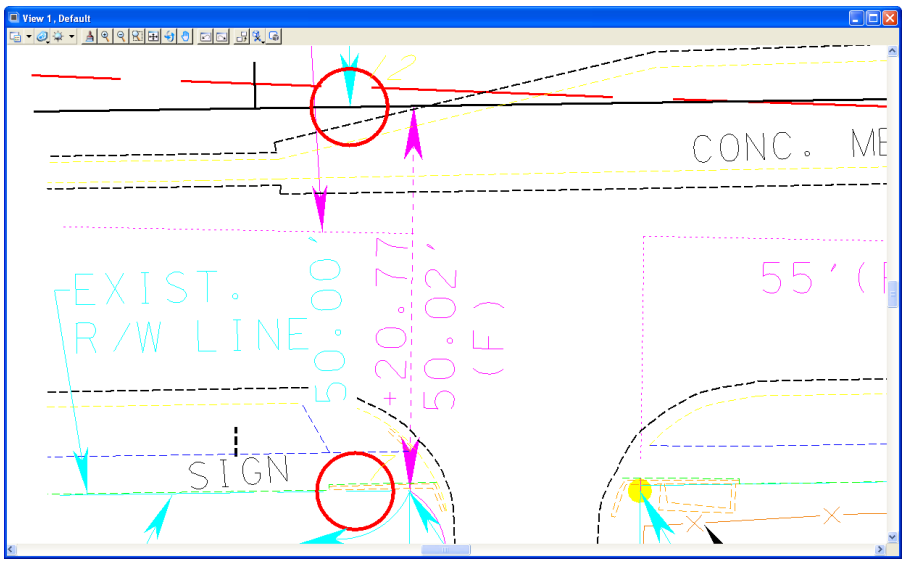
2. Open the DGN file C:\E\Projects\98765432101\rwmap*rwdetl06.dgn*, set the *Plot Scale* to **1" = 40'** as shown using the Right of Way FDOT Menu.



3. Select **Arrows > Set Custom Line Style Scale** from the Right of Way FDOT Menu and set the *Custom Line Style Scale* to **1" = 40'** as shown next. Click **Set Scale** to set the Custom Line Style Scale.

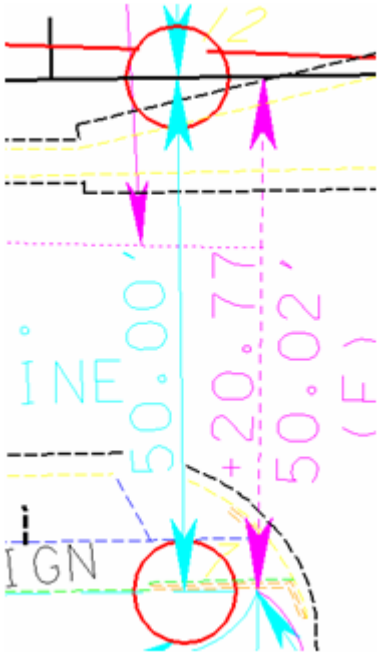


4. Go to the *Saved View* **RW Width**, the Right-of-Way map should display as shown.



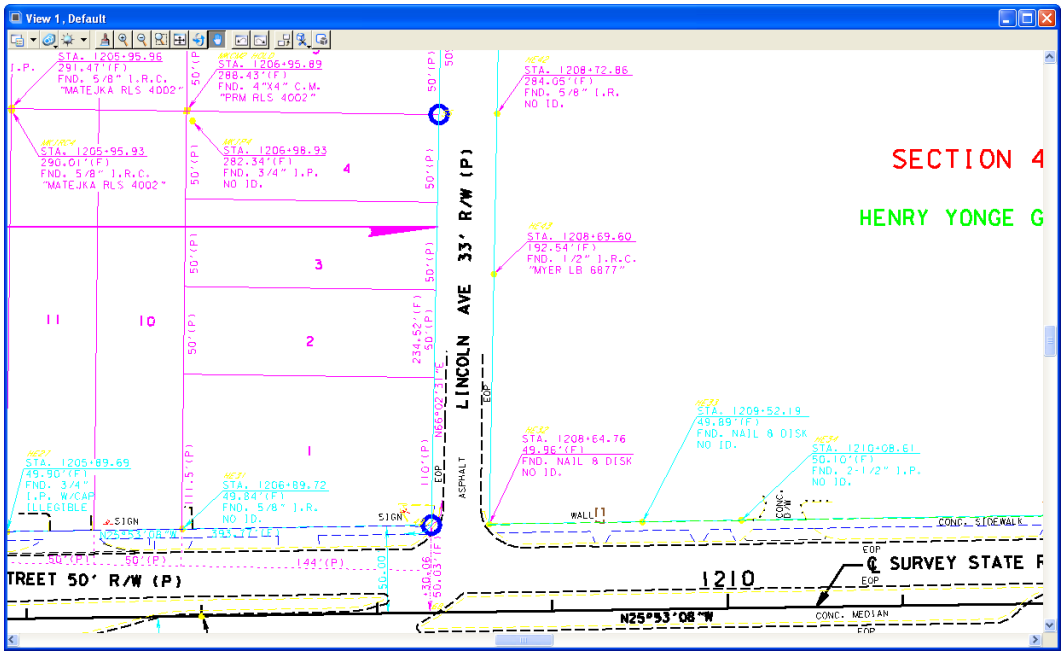
© 2015 FDOT

5. Select **Arrows > Place Width Arrow > RW / LA Width (Existing)** and place the *Existing Right-of-Way* width at the locations indicated by the red circles as shown next. Use the MicroStation *Delete* tool to remove the red circles when finished.



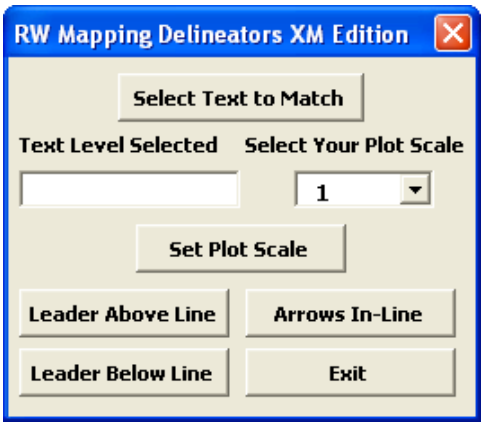
Note Snap to the center of the red circles to place the end points of the Width line.

6. Go to the *Saved View* **Delineators**, the Right of Way map should display as shown.

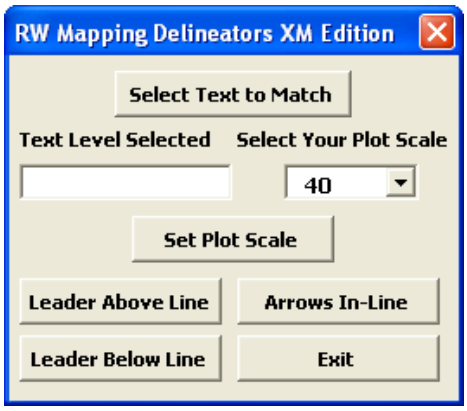


 © 2015 FDOT

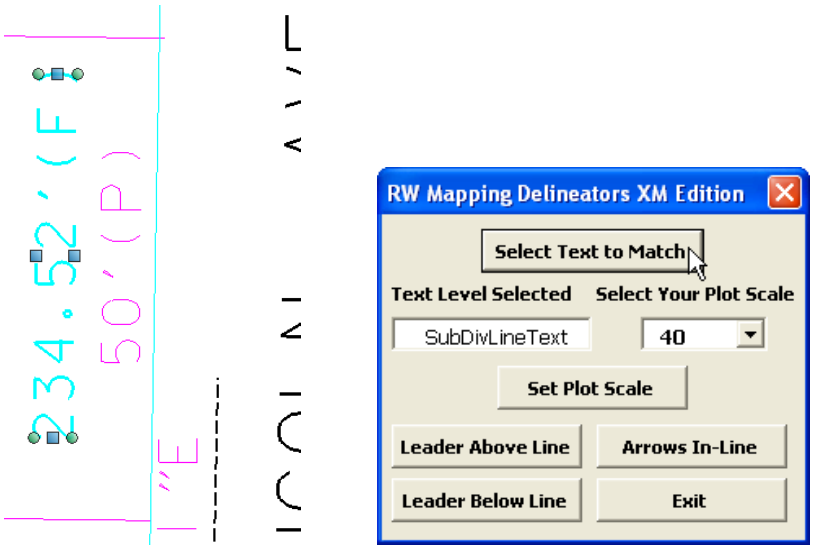
7. Select **Arrows** > **Place Delineators** from the Right of Way FDOT Menu. The RW Mapping Delineators dialog will display as shown.



8. Set the *Scale* to **1" = 40'** as shown.

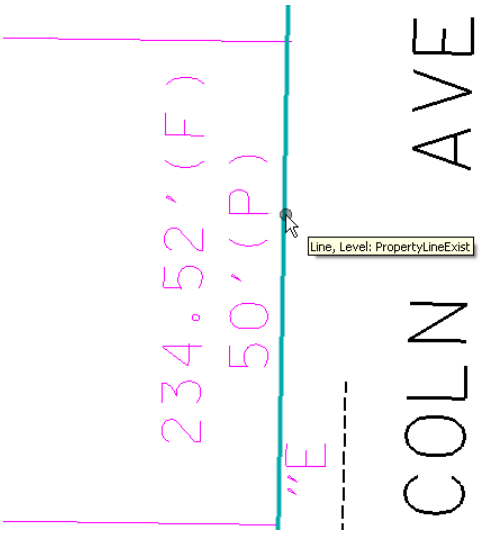


9. Click the **Match Text Symbology** button, and then left-click on the *Text* "**234.52' (F)**" to select; then, accept the text element as the ByLevel Symbology to be matched by clicking on the **Select Text to Match** button.

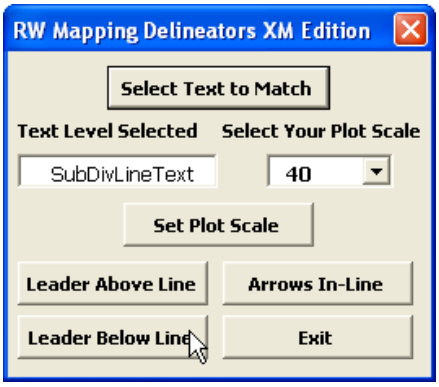


© 2015 FDOT

10. Select the line on which the delineator arrows are to be placed.



11. Select the **Leader Below Line** button. The delineator arrows will be placed at the ByLevel Symbology of the Text element and at the selected scale. The delineator arrows are placed dependant on the direction that the line was drawn.



© 2015 FDOT

APPENDIX D

© 2015 FDOT

APPENDIX E - CONVERTING R/W DESIGN FILES TO MICROSTATION V8

Prior to converting Right of Way Mapping project/design files to V8 format the user should consider the following:

- It is important that all design files that are to be converted should adhere to the CADD Standards the project was created in.
- The design files must be QC compliant to FDOT CADD Standards (file names and graphical symbology).
- The design files must be free of errors related to file integrity. This can be done with tools such as Axiom's FileFixer.
- If an entire project is to be converted to V8, all disciplines working on that project must be migrated at the same time (No exceptions).
- If the design file to be converted is a V7 design file use the FDOT script files provided. If the design file is to convert format only, simply open in MicroStation V8 and accept the option to convert to V8 file format.
- After the conversion convert any support file such as Geopak input files. Check Global Origin, Working Units, Level Names and Reference Attachments.

Important! *Always work on a COPY of files to be converted.*

To convert V7 design files to MicroStation V8 the following procedure is recommended:

A R/W conversion script file is provided with the FDOT2010 CADD software and is located in the following directory:

C:\FDOT2010\RESOUCES\Conversion**rwv7toMR3.csv**

C:\FDOT2010\RESOUCES\Conversion**V8MR3toXM.csv**

This file is an Excel spreadsheet and contains required column data for converting V7 design files to V8 Right of Way Mapping CADD Standards.

During the conversion process this file is used to search for existing elements symbologies within the V7 design file and selects those elements that match the description within the table and converts these to V8 symbology elements in the output design file.

rwv7tov8.csv

	A	B	C	D	E	F	G	H	I	J
1	%section	Levels								
2	Level	Color	LineStyle	Weight	Cell	ElementType	V8OutPutLevel	ByLevelColor	ByLevelStyle	ByLevelWeight
3	%%32	0	LEADERLT	2			ArrowLeaderLT_Term	0	LEADERLT	2
4	%%32	0	LEADERRT	2			ArrowLeaderRT_Term	0	LEADERRT	2
5	%%32	0	ARROW2	0			ArrowRWWidth	0	ARROW2	0
6	%%47	5	SUBDIV2	1			ArrowSubDouble	5	SUBDIV2	1
7	%%47	5	SUBDIV	1			ArrowSubSingle	5	SUBDIV	1
8	%%47	5	SUBDIVLT	1			ArrowSubSingleLT	5	SUBDIVLT	1
9	%%47	5	SUBDIVRT	1			ArrowSubSingleRT	5	SUBDIVRT	1
10	%%47	5	SUBDIV2LT	1			ArrowSubTwoLT	5	SUBDIV2LT	1
11	%%47	5	SUBDIV2LTOnly	1			ArrowSubTwoLTOnly	5	SUBDIV2LTOnly	1
12	%%47	5	SUBDIV2RT	1			ArrowSubTwoRT	5	SUBDIV2RT	1
13	%%47	5	SUBDIV2RTOnly	1			ArrowSubTwoRTOnly	5	SUBDIV2RTOnly	1

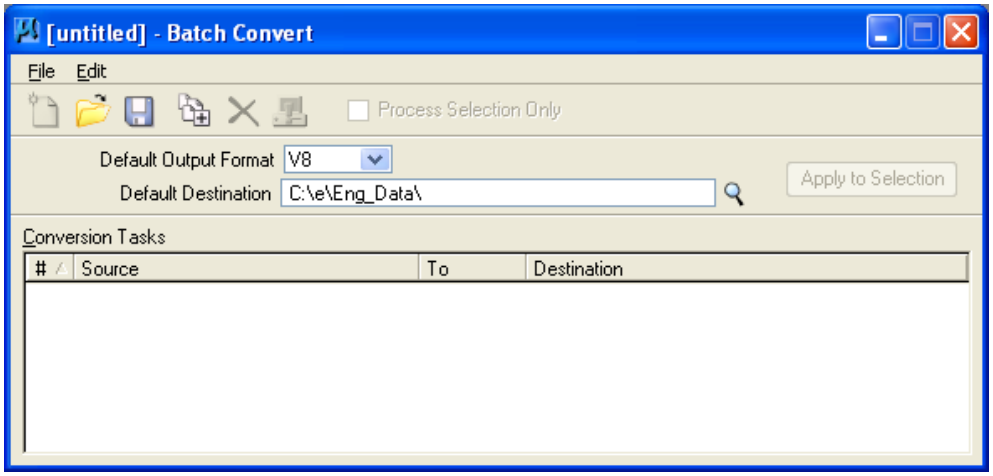
MicroStation V8 provides several methods for converting design files to V8. Only one method is described here and is the recommended procedure for R/W CADD users. This procedure uses the MicroStation:

APPENDIX E

BATCH CONVERTER

The Batch Converter utility can convert a single design file or multiple files across different directories and apply different conversion format types to selected design files. For full instructions on the use of this utility the user should refer to MicroStation Help files.

To begin the conversion process on a single V7 design file open the Batch Converter by selecting from the Main Menu **Utility>Batch Converter**:

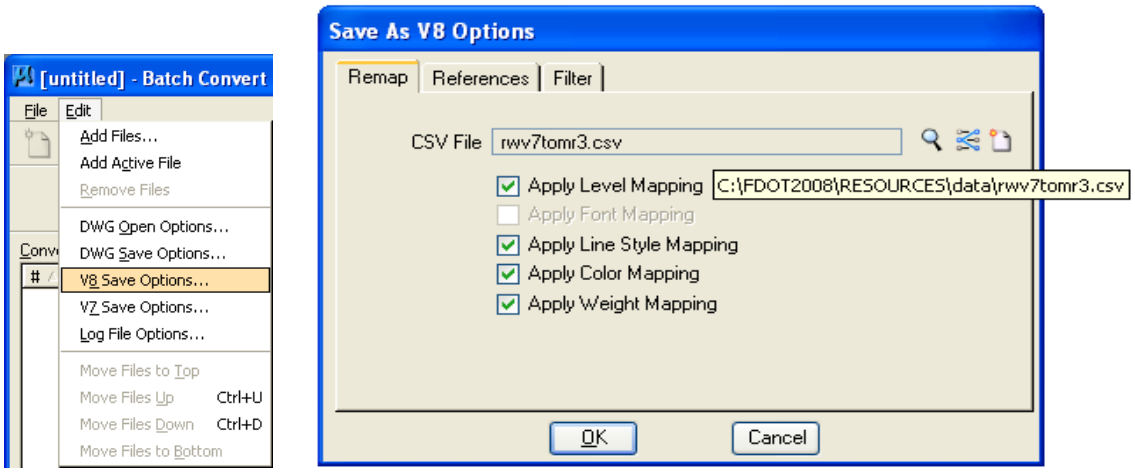


- **Default Output Format** Set the output format to V8
- **Default Destination** Set the directory location for the output file. The small magnifying glass can be selected to browse to the desired location. It should be noted that the Batch Converter program will not overwrite an existing design file in the output directory with the same name. However the program does not prompt the user that a file already exists with the same name but will state in the conversion dialog that the file is up to date.
- **Select Edit >V8 Options** Sets the conversion file name (rwv7toMR3.csv and what element symbology types to convert.)

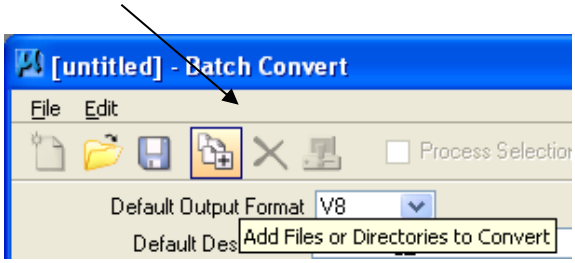
© 2015 FDOT

APPENDIX E

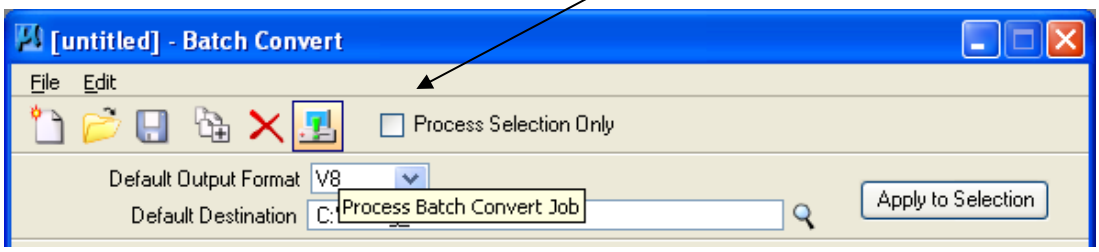
In the **Save V8 Options** dialog box set the CSV file name to **rwv7toMR3.csv** or by selecting the magnifying glass the user can browse to the desired location. Make sure each element symbology type to be converted is selected. Note that the **Apply Font Mapping** is grayed out, as this conversion file contains no data for converting font types. Select the OK button when complete.



Select the **Add Files or Directories to Convert** button to open the directory and file selection dialog. As stated, multiple files or directories can be added to the file list as needed.



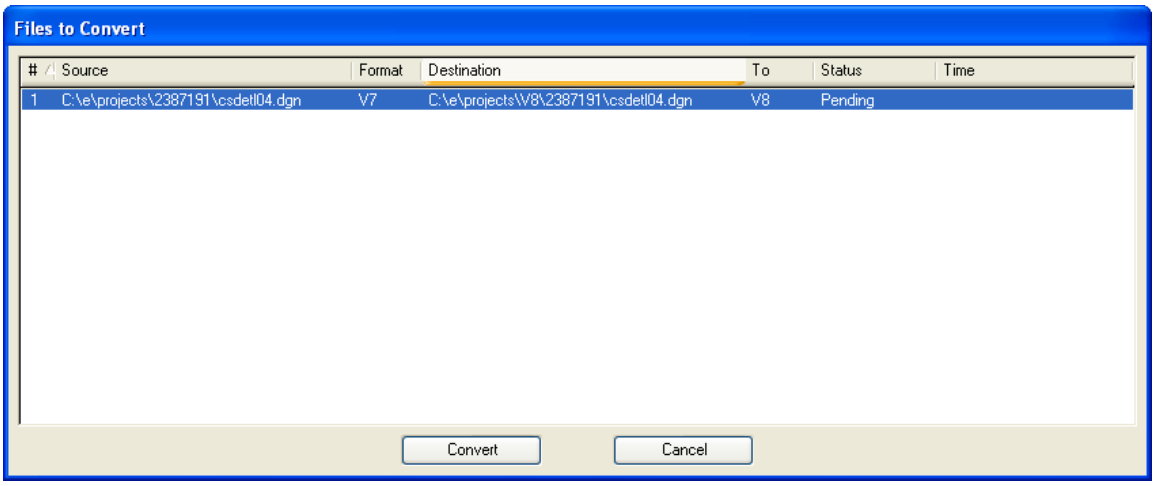
After all files to be converted are added to the list, select the **Process Batch Convert Job** button to begin processing.



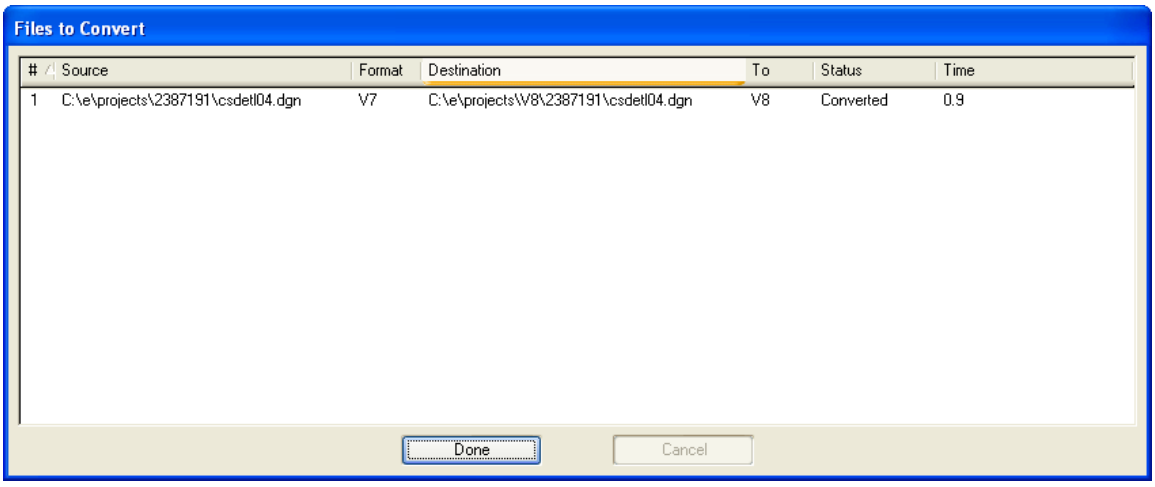
© 2015 FDOT

APPENDIX E

The **Files to Convert** dialog displays the file path and name of the file to be converted, the destination file name and path along with the Status: **Pending** or **Up to Date**. As stated, if the Status is up to date a file with the same name already exists at that directory location and the converter will not processes that file name.



Select the **Convert** button and all files will be converted to V8 format with standard R/W V7 elements converted to standard FDOT2010 R/W V8 symbologies. After conversion, the above dialog should appear as shown below, with the Convert button changed to Done and the Status column changed to Converted.



© 2015 FDOT