FDOTConnect for OpenRoads Designer

Roadway Plans Development

COURSE GUIDE

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State of Florida

Department of Transportation

FDOTConnect

for

OpenRoads Designer **Roadway Plans Development**

Course Guide

2026

PRODUCTION SUPPORT / CADD OFFICE

TALLAHASSEE, FLORIDA

http://www.fdot.gov/cadd

FDOTConnect

for

OpenRoads Designer

Roadway Plans Development

Description

This is a 2-day training course to introduce OpenRoads Designer CONNECT Edition - OpenRoads Technology tools for Plan Development Workflows on Florida Department of Transportation (FDOT) projects. The curriculum was developed within the FDOTConnect Workspace to provide sample exercises for most of the new Plan Development tools on a sample project data set to include the following:

- Key Sheet
- Signature Sheet
- Typical Section Sheet
- General Notes Sheet
- Plan Only Sheets
- Plan - Profile Sheets
- Profile Only Sheets
- Cross Section Sheets
- Plan Sheet Annotation and Indexing
- Plan Labeling

Objectives

- Learn about the various Plans Development Materials and where they are located
- Use and discover the Named Boundary Tools and **FDOT** Tab
- Use and discover the FDOT Workspace/CADD Standards
- Learn how to prepare a set of FDOT Plans

Audience

FDOT Roadway Designers and Engineers

Prerequisites

Participants need to have a basic understanding of Computer Aided Drafting and Design (CADD) using MicroStation, a basic understanding of OpenRoads Designer Connect Edition concepts and a solid understanding of the engineering necessary to design a Roadway.

In addition to the above, the participant is required to complete:

FDOT Roadway Design 2D and 3D Modeling - Basic Training.

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INTRODUCTION

This course was developed to introduce OpenRoads Designer CONNECT Edition tools for Plan Development Workflows on Florida Department of Transportation (FDOT) projects. The curriculum was developed within the FDOTConnect Workspace to provide sample exercises for most of the new Plan Development tools on a sample project data set.

PLAN DEVELOPMENT MATERIALS

FDOT DESIGN MANUAL

The ***FDOT Design Manual (FDM)*** sets forth geometric and other design criteria, as well as procedures for Florida Department of Transportation (FDOT) projects. The information contained in the FDM applies to the preparation of contract plans for roadways and structures. Contract Plan Sets, and the specifications that they contain, are the key documents for detailed project construction and are the record on which the contractor bids.

The ***FDM*** is a multi-part manual.

1. ***Part 1*** provides guidelines for the development and processes of those contract plan sets.
2. ***Part 2*** provides the design and engineering criteria and provides the basis for uniform plans preparation for typical roadway design. Precise standards for specific situations must be based upon sound engineering practices and judgments.
3. ***Part 9*** provides the reference material necessary for the assembly and plans preparation of those contract plan sets. Those materials will include the specific requirements for a plan sheet or component in the order they appear in a standard plan set.

The design and preparation of these plans is purely a matter of the application of sound engineering practices including engineering criteria, standards, and presentation techniques. The use of these plan set guidelines from the FDM does not exempt the engineer from their professional responsibility for the necessary accuracy and completeness of the plan set.

FDOT REFERENCE LINKS

The latest versions of the FDOT reference materials are available from various websites:

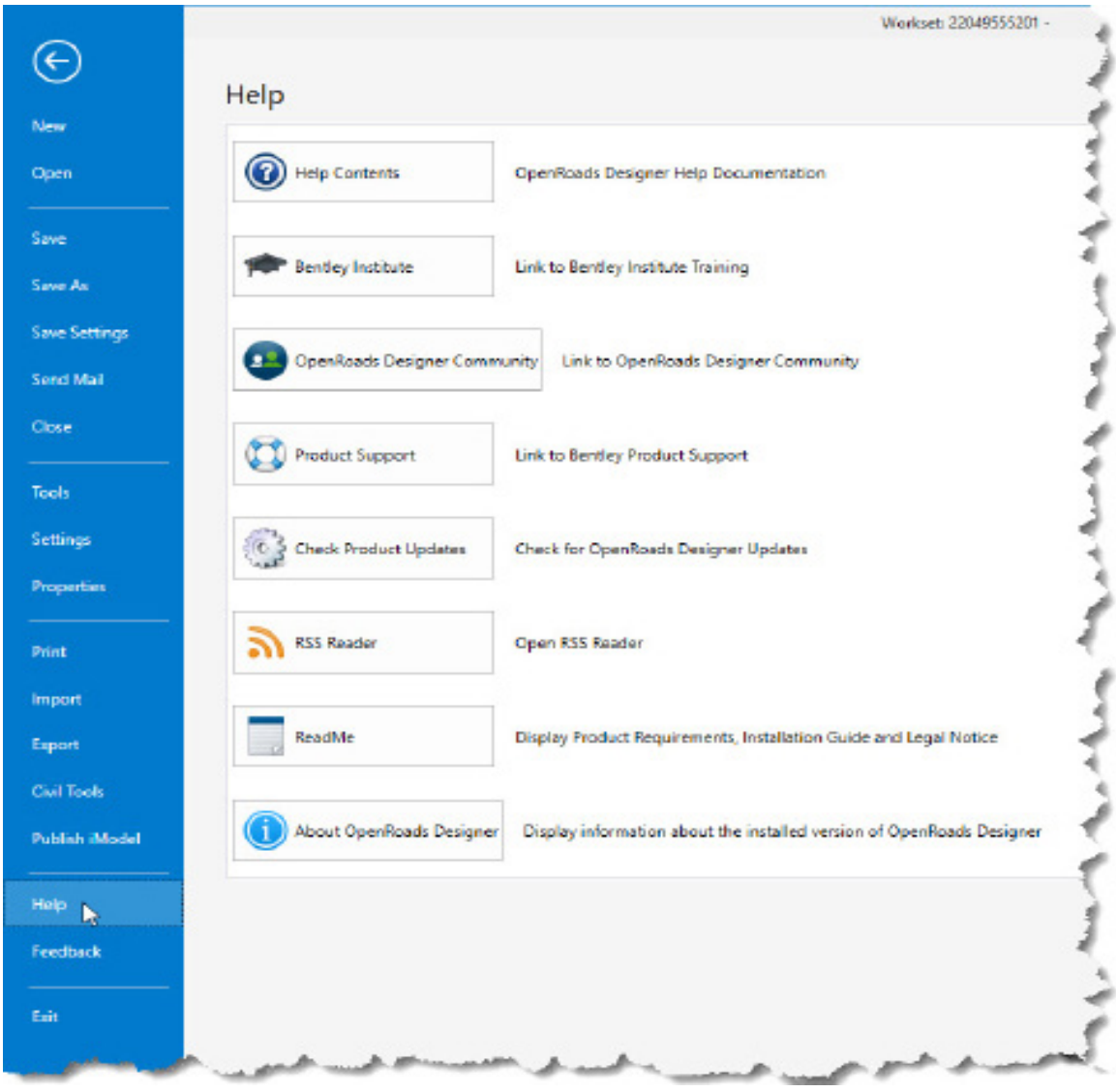
- The latest version of the ***FDM*** is located at: http://www.fdot.gov/roadway/FDM/
- The latest version of the ***FDOT CADD Manual*** is located at:

https://www.fdot.gov/cadd/downloads/publications/caddmanualfdm/FDOTConnectc3d.shtm

EXPECTATIONS – WHAT THIS COURSE PROVIDES

This course provides a standard workflow for designing a project with Bentley Systems OpenRoads Designer CONNECT Edition within the FDOTConnect Workspace. Although most tools are used throughout, this course does not provide a description of every Bentley Systems OpenRoads Designer CONNECT Edition - Civil Tool. Integrated help for each of the tools can be found by selecting FILE and selecting Help to bring up Bentley's Online Help.

File > Help



DOCUMENT STYLE

Style conventions used throughout the course guide are shown in the following table.

Item	Convention	Example
Menu names, Commands, and Ribbon Navigation	Bold (Names separated with > symbol)	• General form is **Workflow > Tab > Group > Tool** • **File > Open** • **File > Settings > User > Preferences** • **OpenBridge Modeler > FDOT > Actions > Create File**
Dialog actions	Bold	• Click the **Apply** button. • Click the **Graphic Select** button to the right of the *Horizontal Alignment Include* box.
Dialog field names	Italic	• Key in **Hemfield Road** in the *Alignment Name* field. • Click the **Graphic Select** button to the right of the *Horizontal Alignment Include* field.
Key-ins	Bold	• Key in **Hemfield Road** in the *Alignment Name* field.
File names	Italic	• Open the file *Working Graphics.dgn* in the C:\Bentley Training\GEOPAK 101\Project Setup\ Practice\ folder.
File paths	Not Italic or Bold	• Open the file *Working Graphics.dgn* in the C:\Bentley Training\GEOPAK 101\Project Setup\ Practice\ folder.

FILE TYPES

The Bentley Systems OpenRoads technology road design process now uses a single source *File Type*, the *DGN* file. All pertinent design data is stored in the design file. This information can be viewed through the Project Explorer and reported on in the Civil Report Browser.

Below is a brief description of the legacy *File Type*s used in GEOPAK which can be imported or exported **(i/o)** with OpenRoads Technology.

File Type Description:

- *Surface.tin* (i/o) - A binary file, also known as a GEOPAK digital terrain model (DTM), that stores features made up of random points, break lines, and boundary data along with triangulated surface model. The features and the triangles together represent an existing ground surface.

- *Surface.dat (i)* - A binary (or ASCII) file containing string and point information that is used for digital terrain model construction.

- *Surface.dtm (i/o)* – A binary file, also known as a Roadway Designer digital terrain model, stores features made up of components, break lines, and boundary data along with triangulated surface model. The features and the triangles together represent either existing ground surface or the proposed roadway corridor model.

- *Template Library.itl (i)* - Stores templates and template components. Different components can be assembled to build templates, which define the typical sections of a roadway. Only one Template Library file may be open for editing at a given time.

LEARNING RESOURCES

There are several resources available for learning about the various Bentley Systems OpenRoads Designer

CONNECT Edition tools. Among them are:

- Bentley OpenRoads Wiki Page:
  https://communities.bentley.com/products/road___site_design/w/road_and_site_design__wiki/33435/openroads-designer
- Bentley OpenRoads Communities Page:
  https://communities.bentley.com/products/road___site_design/f/geopak-inroads-mx-openroads-forum
- Bentley Learn:
  https://www.bentley.com/en/learn
- Bentley OpenRoads Videos are available on a variety of topics:
  http://www.youtube.com/user/BentleyCivil
- Production Support Office | CADD (CADD) Website:
  http://www.fdot.gov/cadd/
- Webinar training recordings are available on many of the subjects covered in this manual:
  http://www.fdot.gov/cadd/main/FDOTCaddTraining.shtm
  http://www.fdot.gov/cadd/downloads/webinars/Posted.shtm#loadSection
  https://www.youtube.com/@FDOTTraining/featured

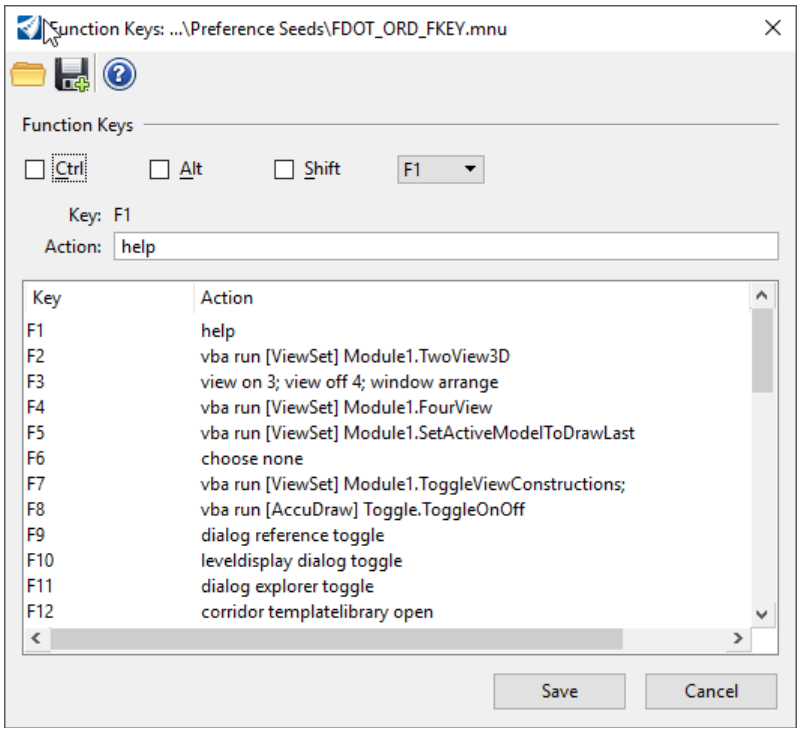
COURSE SUPPORTING FILES

The exercises for each chapter are independent of one another and can be used without having to complete the exercises in previous modules. The exercise files are organized into separate completed Selected zip files for each chapter. All files used in this course are located also at this link:

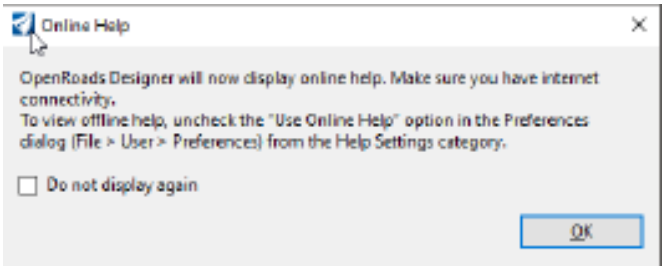
https://www.fdot.gov/cadd/downloads/documentation/FDOTConnecttraining/FDOTConnect-plan-development-workflow

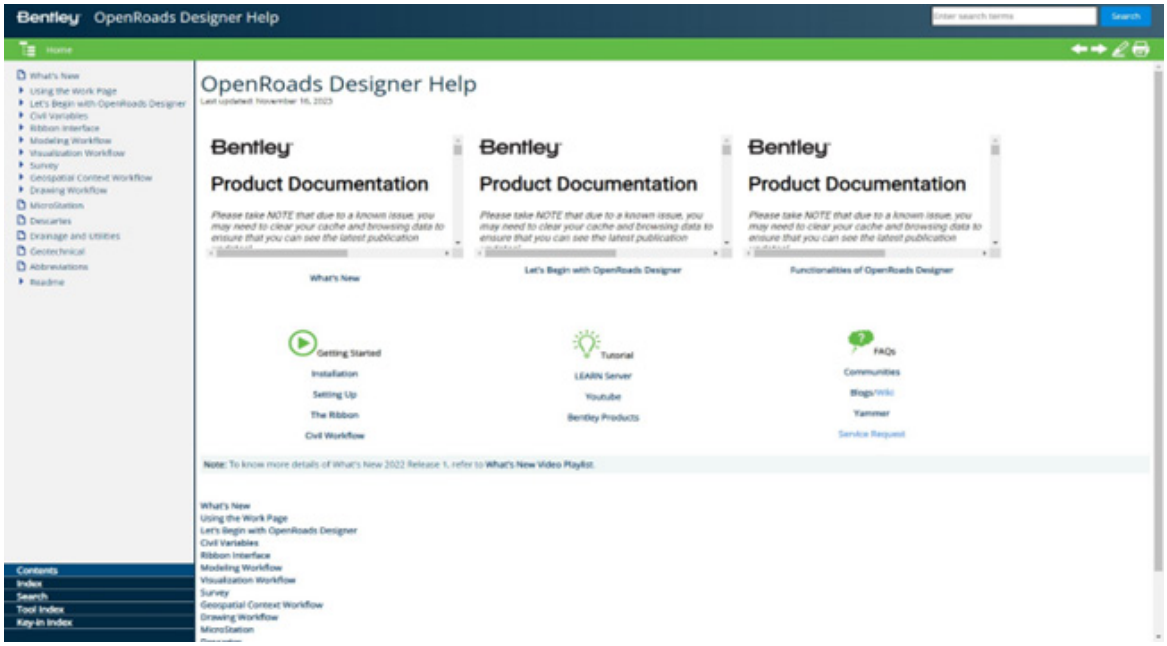
FDOTCONNECT FUNCTION KEYS

FDOTConnect Function Key Assignments	
F1	Opens the OpenRoads Designer Online Help. Ctrl+F1 Closes all Views except View 1
F2	Open View 1 (2D Plan) and View 2 (3D Isometric) and fits both views.
F3	Opens View 3 (2D Plan), closes all View 4, and arranges all Views.
F4	Open View 1 (2D Plan), View 2 (3D Isometric), View 1 (2D Plan), View 1 (2D Plan) & Fits All views
F5	Toggles Dim References ON/OFF
F6	Resets out of any ongoing commands.
F7	Toggles the Construction view attribute ON/OFF.
F8	Toggles between MicroStation AccuDraw and Civil AccuDraw.
F9	Toggles (opens or closes) the Reference dialog.
F10	Toggles (opens or closes) the Level Display dialog.
F11	Toggles (opens or closes) the Project Explorer dialog.
F12	Opens the Create Template dialog.

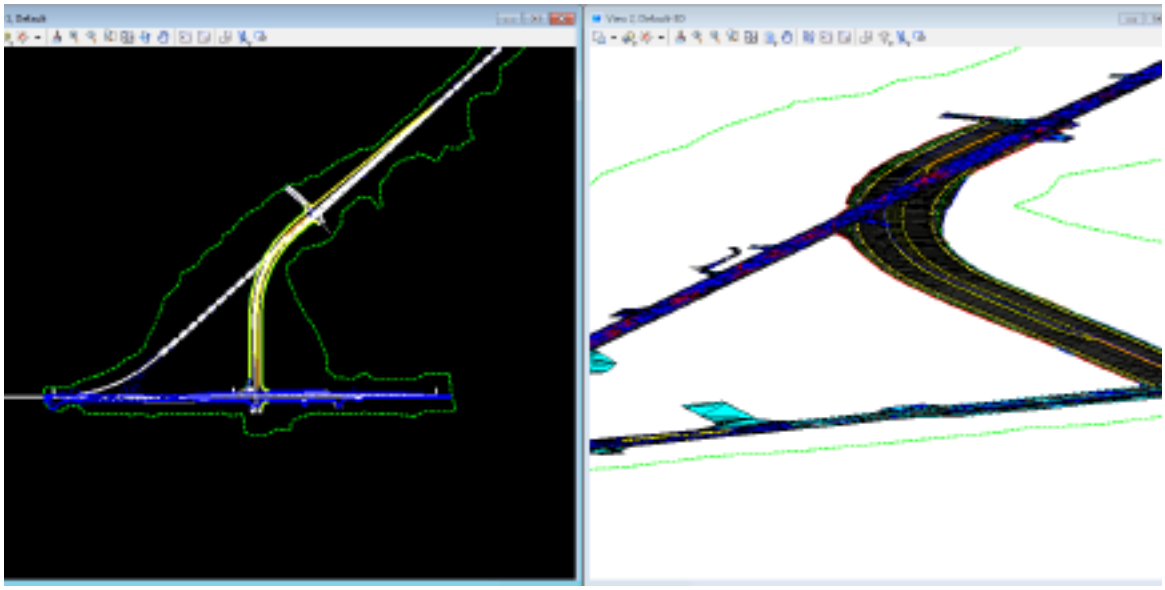


► ***Function Key F1*** – Civil Help.

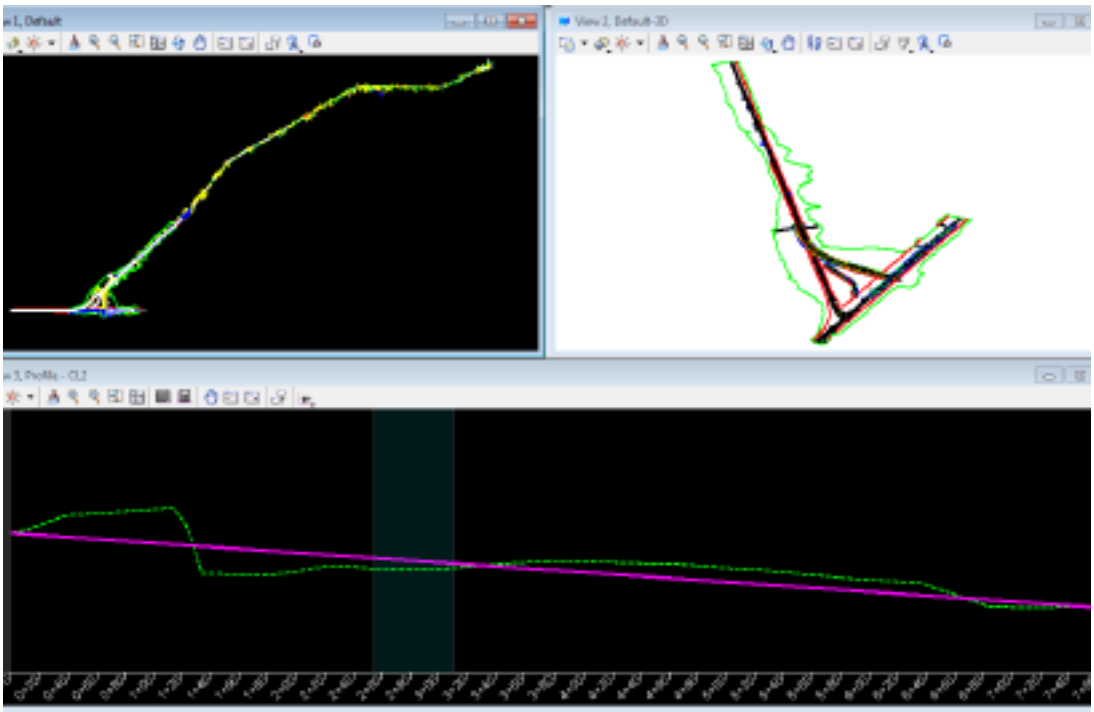




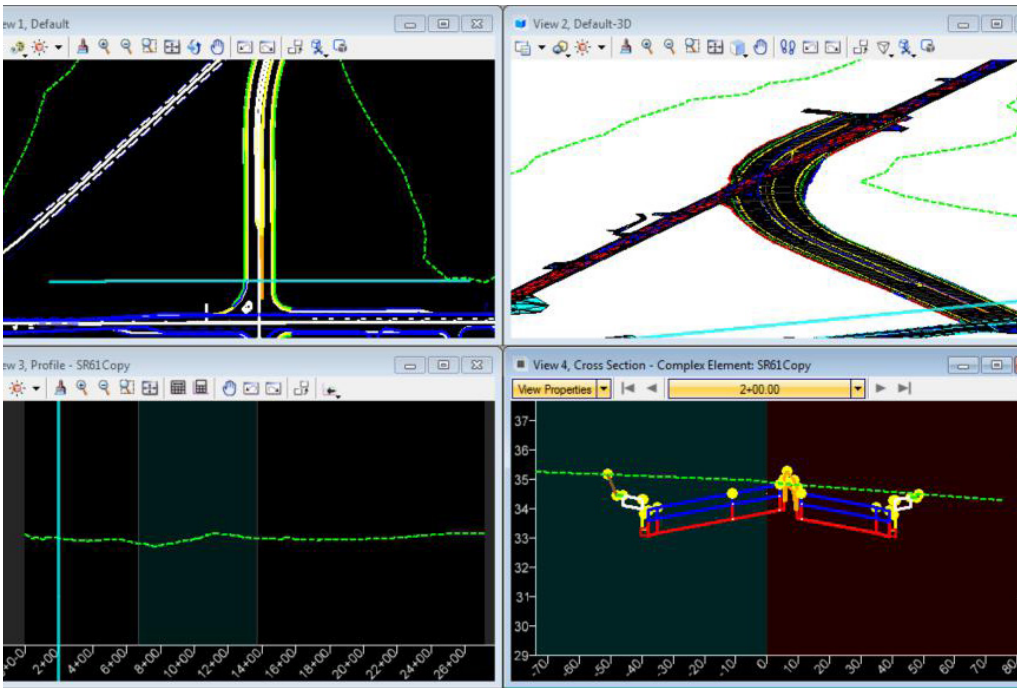
► ***Function Key F2*** – Open and Fits Two Views Setup; View 1- 2D Plan, View 2-Isometric.



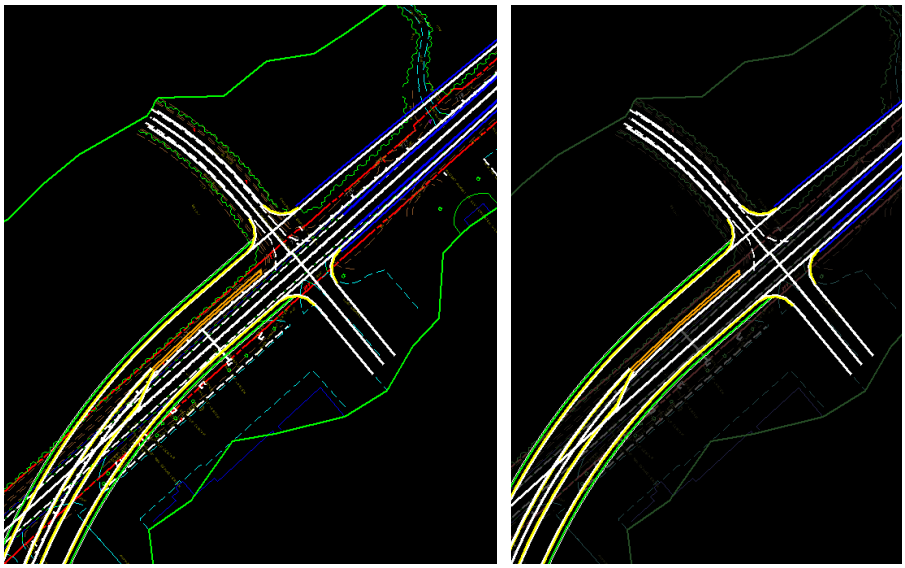
► ***Function Key F3*** – Opens View 3; Closes View 4 and Arranges Views



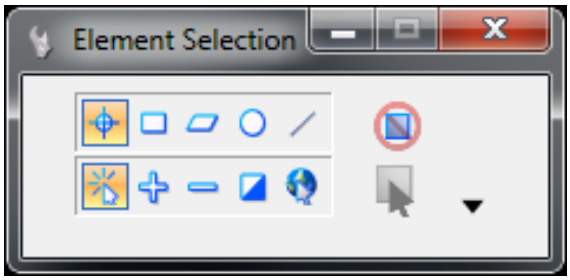
► ***Function Key F4*** – Opens and fits Four View Setup; View 1- 2D Plan, View 2-Isometric, View 3,4 – custom



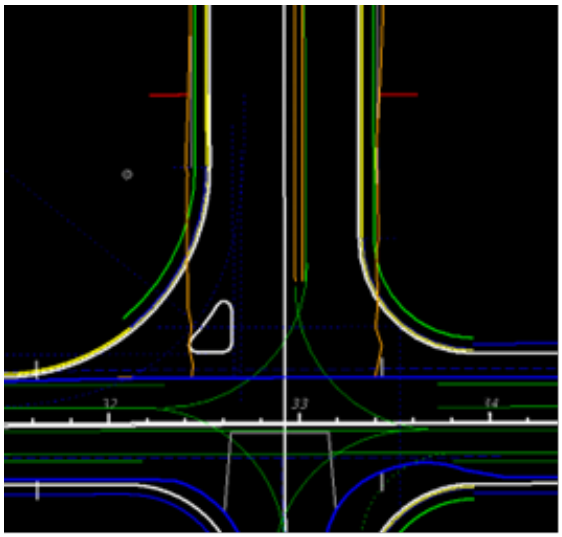
► ***Function Key F5*** – Toggle Dim References.

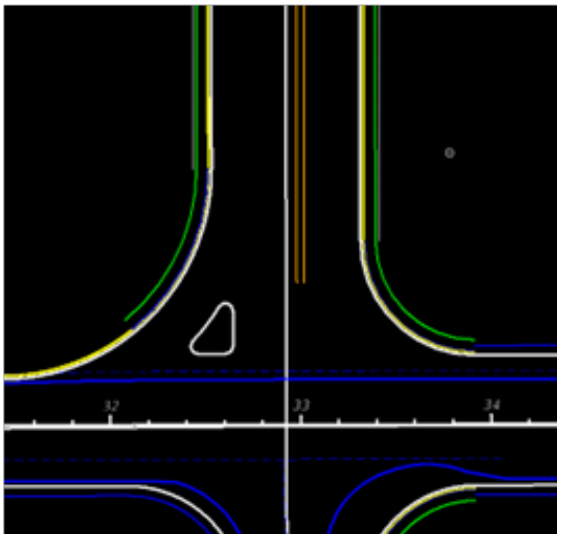


► ***Function Key F6*** – Resets Out of Any Ongoing Commands.

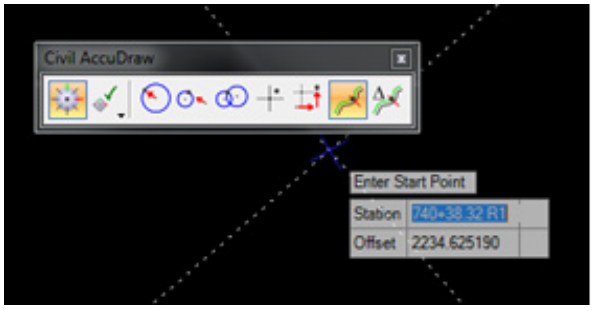


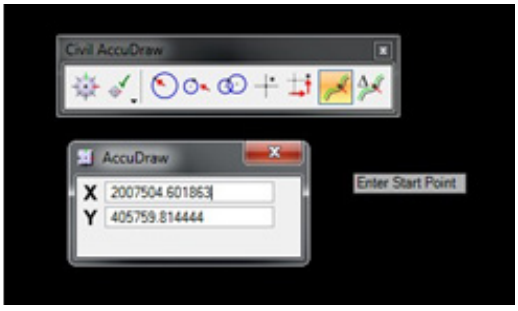
► ***Function Key F7*** – Toggles On/Off Construction View Attributes



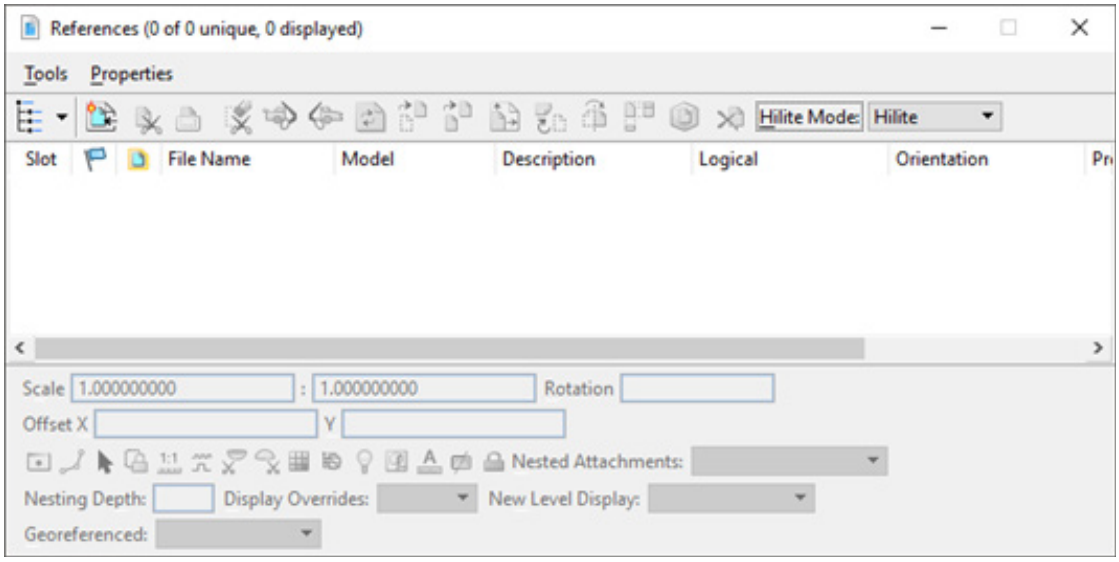


► ***Function Key F8*** – Toggles Between MicroStation AccuDraw and Civil AccuDraw

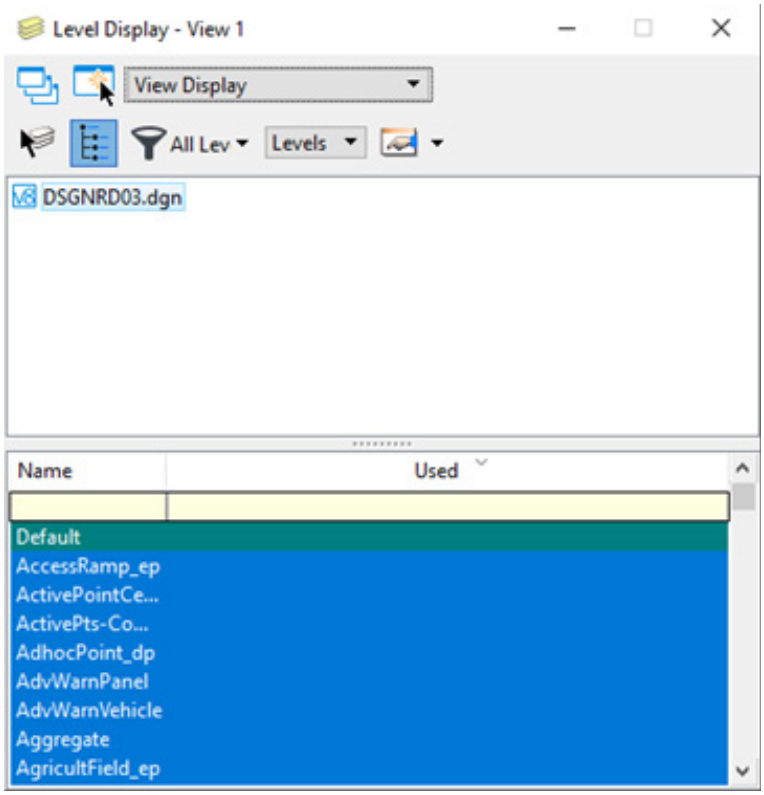




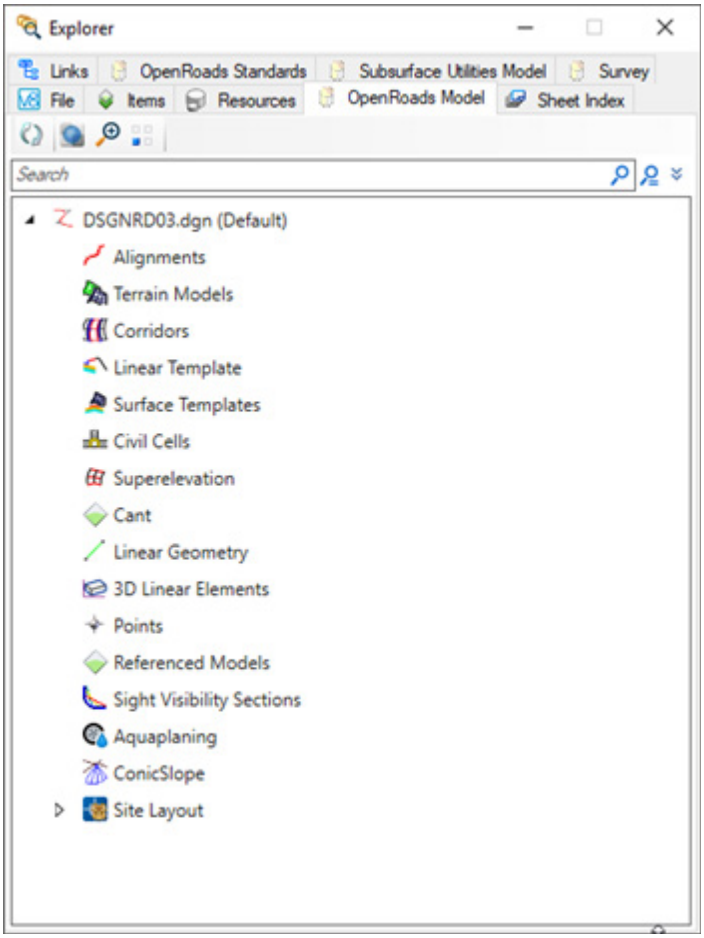
► ***Function Key F9*** – Toggles *References* Dialog Open\Close.



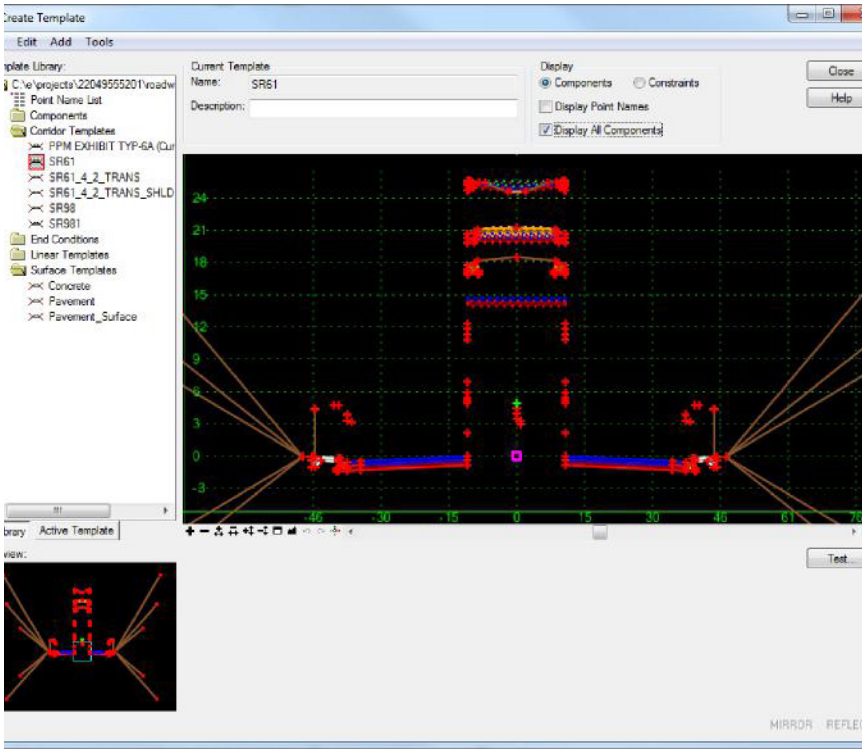
► ***Function Key F10*** – Toggles *Level Display* Dialog Open\Close.



► ***Function Key F11*** - Toggles *Explorer* Dialog Open/Close.



► ***Function Key F12 -*** Corridor Modeling, Opens *Create Template* Dialog.



1 KEY SHEET

KEY SHEET

The Key Sheet is defined as the first sheet in the contract plans. The Key Sheet describes the project, the contents of the plans, and identifies those responsible for preparing the plans. All requirements for the Key Sheet, can be found in ***Part 9, Chapter 910*** of the ***FDOT Design Manual (FDM)***.

OBJECTIVES

- Create a Key Sheet DGN File
- Setup Key Sheet with All Necessary Information

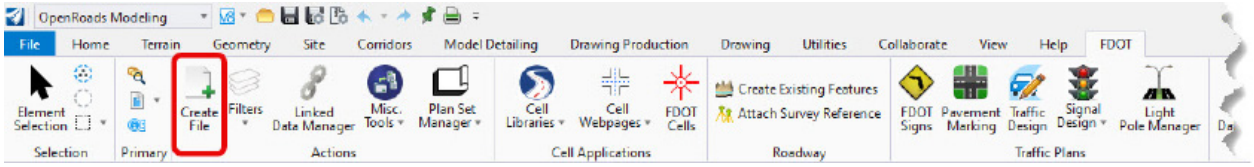
EXERCISE OVERVIEW

Exercise 1.1 *Create the Key Sheet*

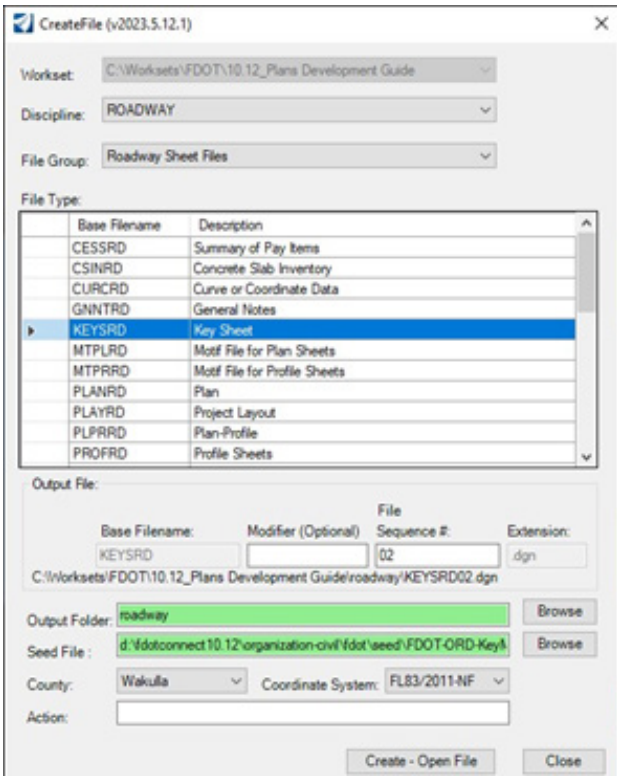
In this exercise, the Key Sheet DGN file will be created, and all the necessary information will be added to the sheet.

1. Launch OpenRoads Designer and open the _BlankFile.dgn located in the project directory.

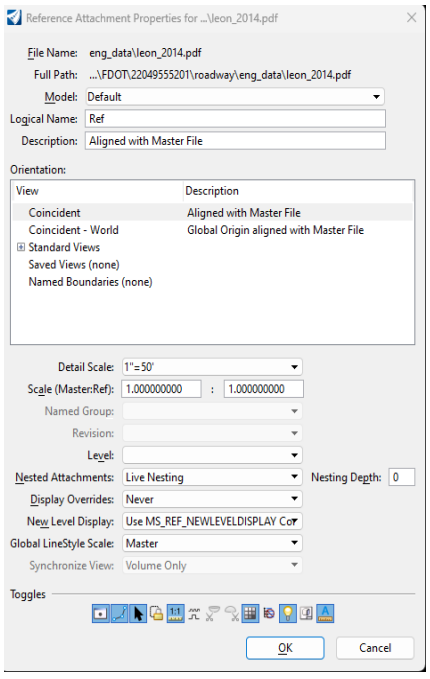
2. On the *OpenRoads Modeling* Workflow, select *Create File*, from the **FDOT** Tab.



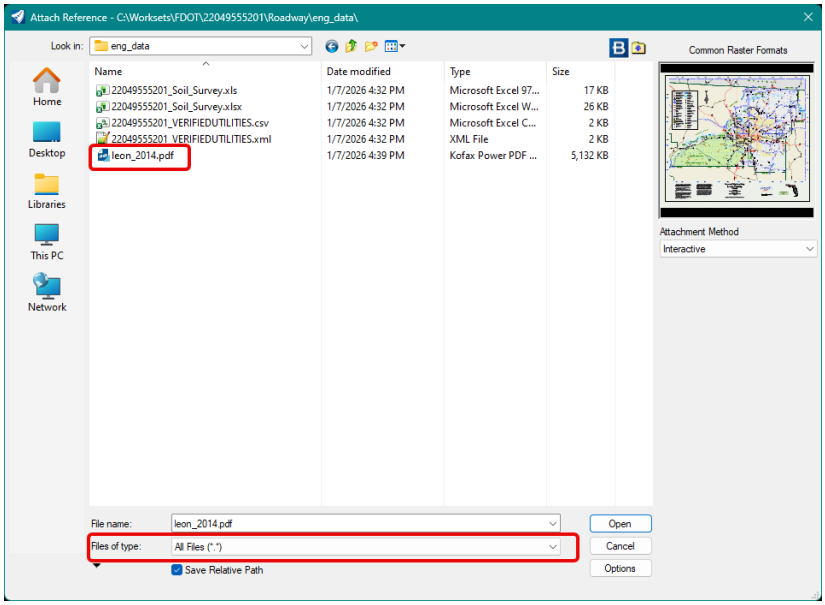
3. The *Create File* dialog displays. On the *Create File* dialog set the *Discipline* to **Roadway** and *File Group* to **Roadway Sheet Files.** From the *File Type* list, select **KEYSRD**. On the *Output File* section of the dialog, be sure to set the *County* to **Wakulla**. Once everything is set up to match the image below, click **Create – Open File** to create and open the Roadway Key Sheet file. Click **Close** to close the *Create File* dialog.



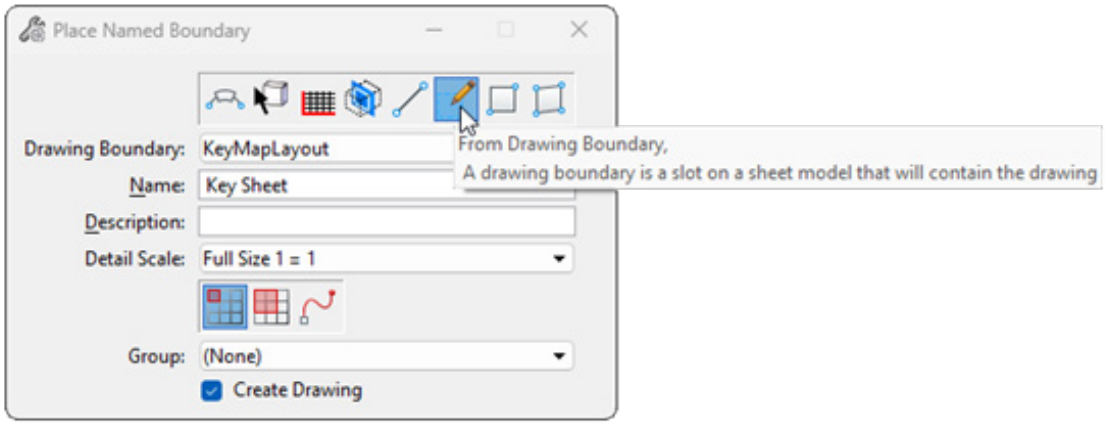
4. The file is created and opened to the Key Sheet design model. Once in the file, reference the county map. You can download the county map here: www.fdot.gov/gis/countymap.shtm



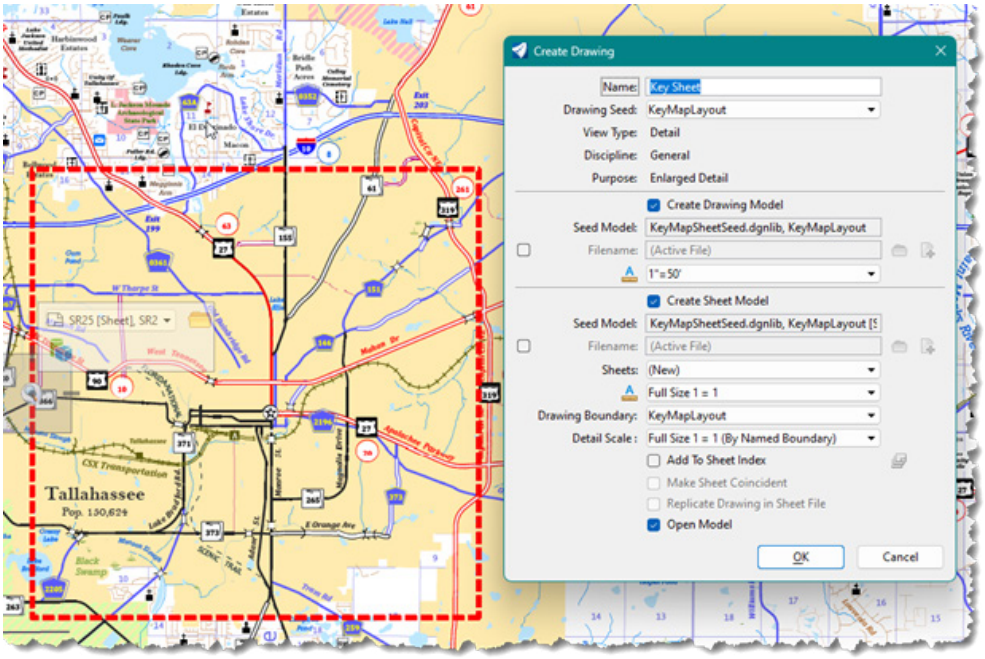
NOTE ***When attaching county map as a reference, you need to change the Files of Type: to All Files (*.*) for it to see the pdf file (see screenshot below).***



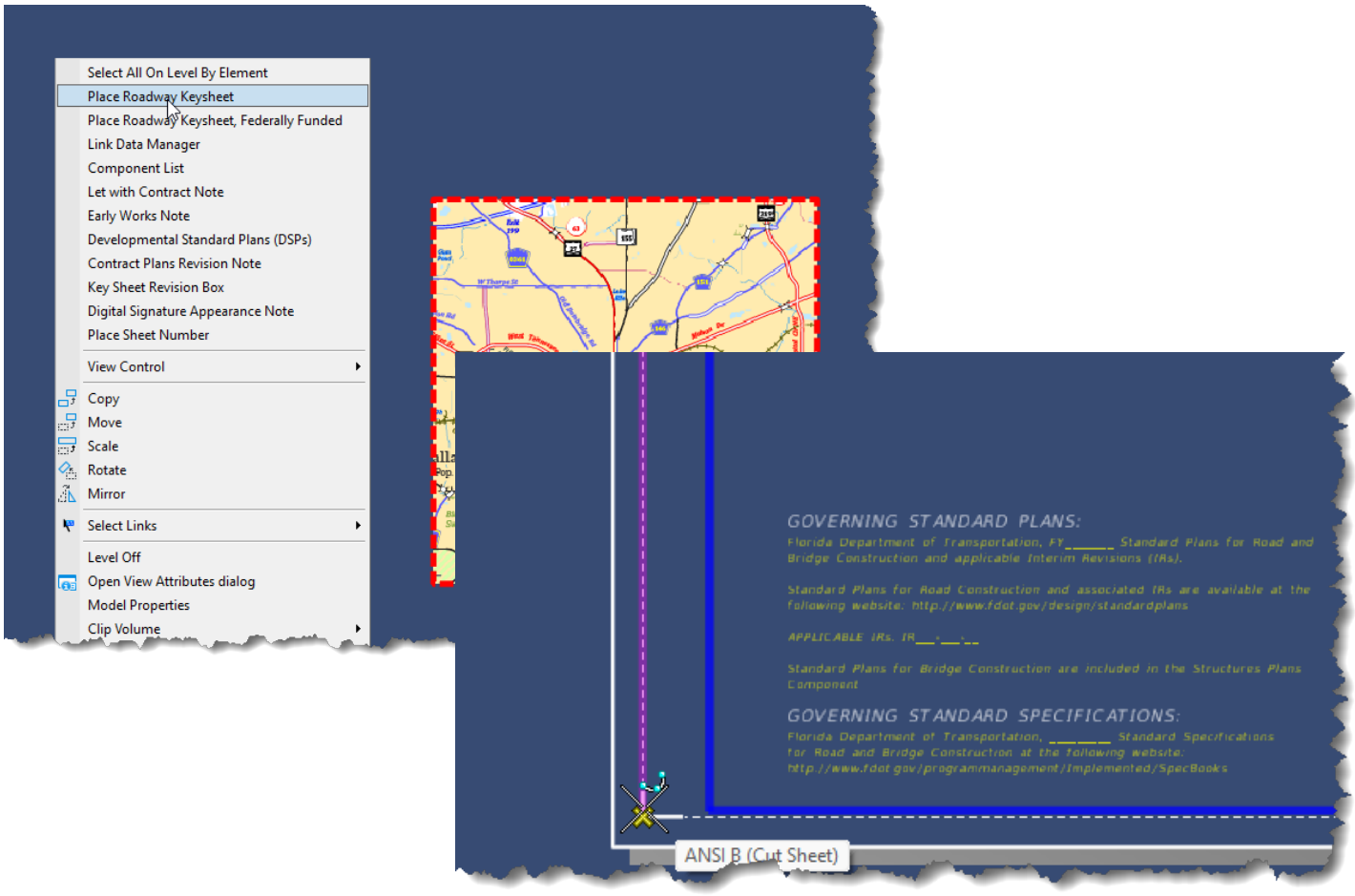
5. From the Drawing Production tab, select the Place Named Boundary tool and set the mode to From Drawing Boundary and fill out the dialog as shown. Make sure the Create Drawing is toggled on.



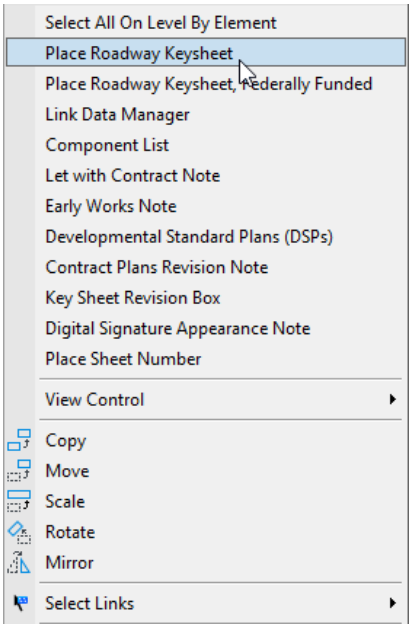
6. Once the Named Boundary is placed, fill out the Create Drawing dialog as shown, and click **OK**. This will create and open the sheet model.



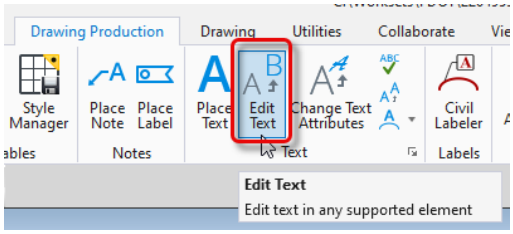
7. Once in the sheet model, right-click and hold to bring up the Context menu. From this menu, select Place Roadway Key Sheet to bring up the Place Active Cell with the KS Roadway cell as the Active Cell. Place the Key Sheet into the file snapping to the lower left corner on the Sheet Boundary.



8. Once in the sheet model, right-click and hold to bring up the Context menu. From this menu, select Place Roadway Key Sheet to bring up the Place Active Cell with the KS Roadway cell as the Active Cell. Place the Key Sheet into the file snapping to the lower left corner on the Sheet Boundary.



9. On the Drawing Production tab use the Edit Text tool to enter the following information:



a) GOVERNING STANDARD PLANS.

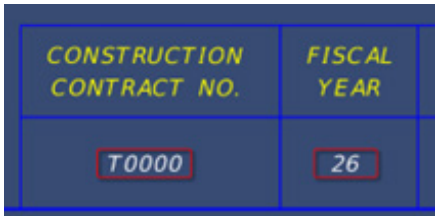
GOVERNING STANDARD PLANS:
Florida Department of Transportation, FY2026-27 Standard Plans for Road and Bridge Construction and applicable Interim Revisions (IRs).

Standard Plans for Road Construction and associated IRs are available at the following website: http://www.fdot.gov/design/standardplans

b) GOVERNING STANDARD SPECIFICATIONS.

GOVERNING STANDARD SPECIFICATIONS:
Florida Department of Transportation, FY2026-27 Standard Specifications for Road and Bridge Construction at the following website:
http://www.fdot.gov/programmanagement/Implemented/SpecBooks

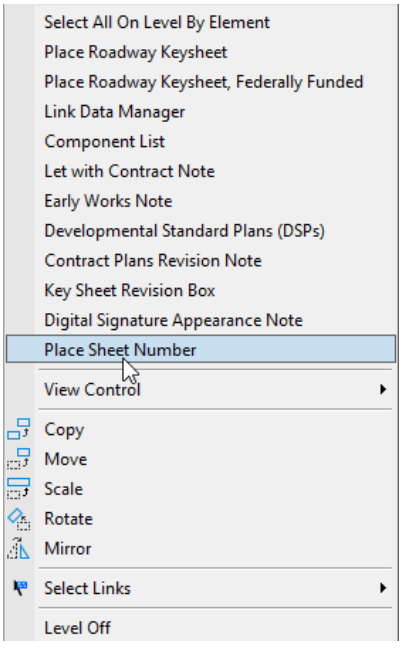
c) Construction Contract No. and Fiscal Year.

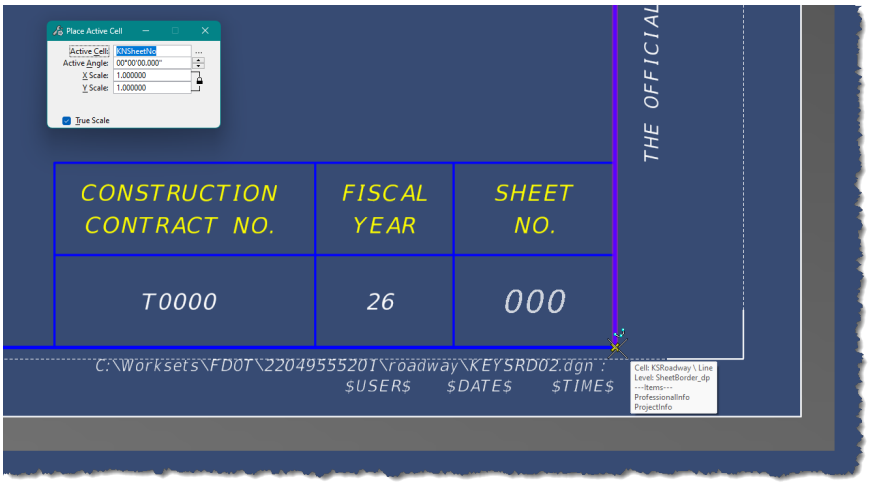


d) FDOT Project Manager.

e) PROJECT DESCRIPTION.

10. Once you have finished editing the text, press F6 on your keyboard to reset the previous command. Then right-click and hold to bring up the Context menu. From this menu, select Place Sheet Number to bring up the Place Active Cell with the KNSheetNo cell as the Active Cell. Place the Key Sheet into the file snapping to the lower right corner of the Key Sheet border.

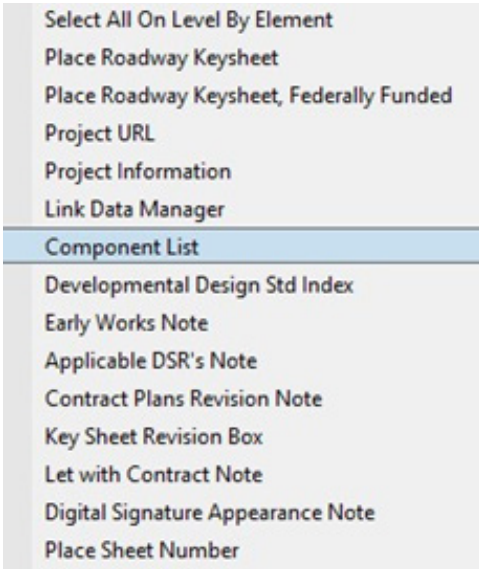




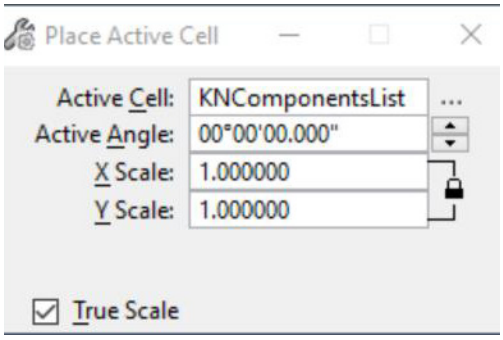
Exercise 1.2 *Place and Edit the Components of Contract Plans Set List*

The Components of Contract Plans Set is a list of all the components included in the plan set. This exercise demonstrates how to add this list to the Key Sheet.

1. Once the Key Sheet has been created, right-click and hold to bring up the context menu. From the context menu, select **Component List**.



2. The MicroStation *Place Active Cell* command launches with KNComponentsList set as the *Active Cell*.



3. Data point at the upper left corner of the Key Sheet border to place the cell.

4. The text appears under the CONTRACT PLANS COMPONENTS on the Key Sheet.

5. To edit the list of components, double-click on the text.

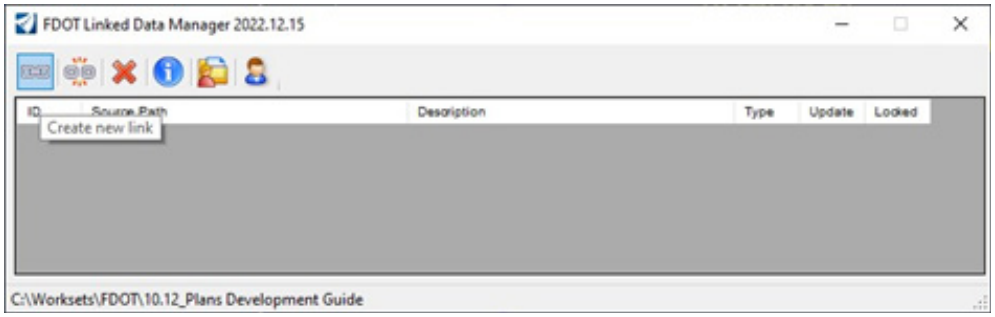
6. Edit the list in the *Text Editor* dialog. This project should include plans for the following components:
   - ROADWAY
   - SIGNING AND PAVEMENT MARKING
   - SIGNALIZATION

7. Data point in MicroStation when finished editing the text.

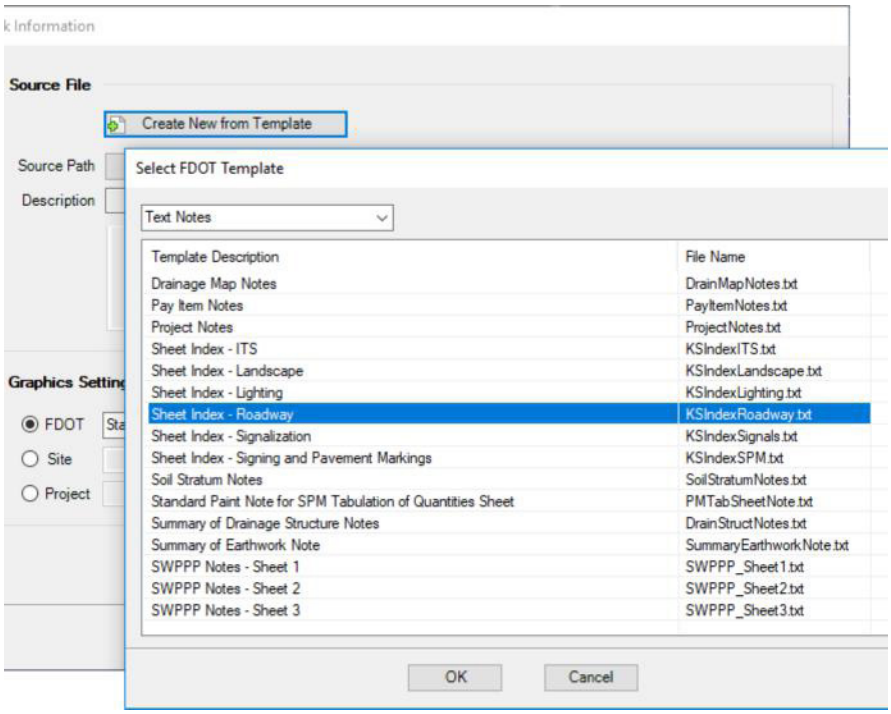
Exercise 1.3 *Create and Place the Key Sheet Index*

1. Use the **OpenRoads Modeling > FDOT > Actions > Linked Data Manager** tool.

2. On the *FDOT Linked Data Manager* dialog, select the **Create new link** button.

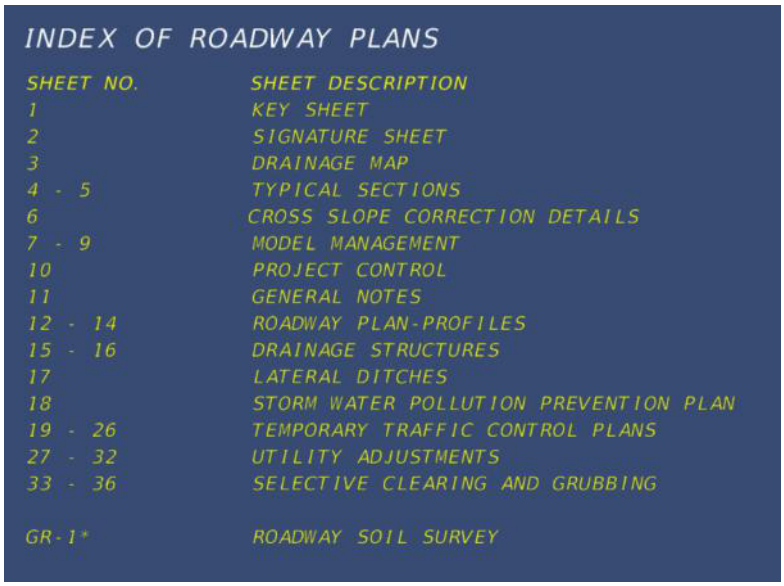


3. From the *Link Information* dialog, select **Create New from Template**. On the *Select FDOT Template* dialog select the **Sheet Index - Roadway** from the *Text Notes* category. Click **OK** and save the *KSIndexRoadway.txt* file in your Roadway folder.



   a. Once saved and back on the *Link Information* dialog, click **OK** to place the Index.

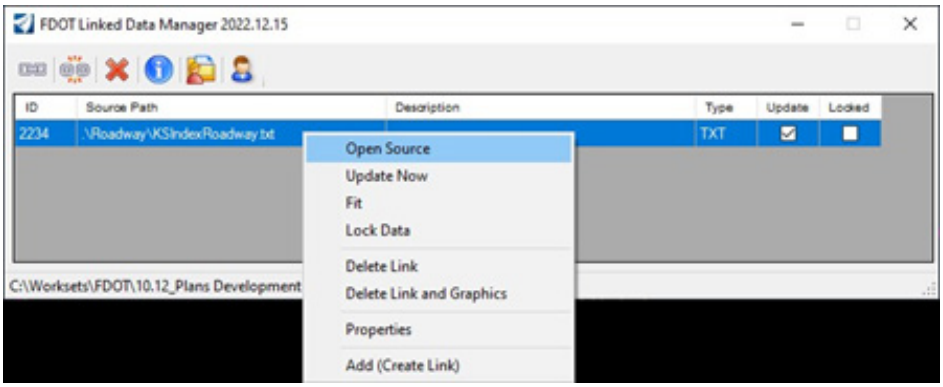
b. Place the Index so that it lines up with the SHEET NO. and SHEET DESCRIPTION headers.



INDEX OF ROADWAY PLANS

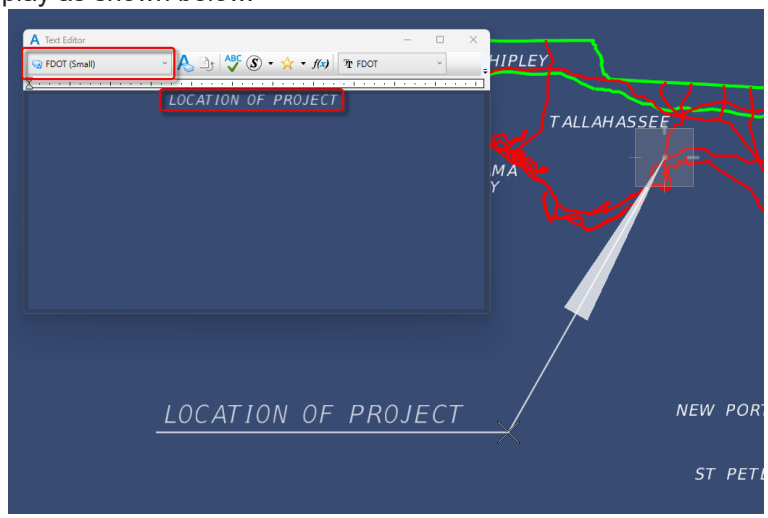
SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2	SIGNATURE SHEET
3	DRAINAGE MAP
4 - 5	TYPICAL SECTIONS
6	CROSS SLOPE CORRECTION DETAILS
7 - 9	MODEL MANAGEMENT
10	PROJECT CONTROL
11	GENERAL NOTES
12 - 14	ROADWAY PLAN-PROFILES
15 - 16	DRAINAGE STRUCTURES
17	LATERAL DITCHES
18	STORM WATER POLLUTION PREVENTION PLAN
19 - 26	TEMPORARY TRAFFIC CONTROL PLANS
27 - 32	UTILITY ADJUSTMENTS
33 - 36	SELECTIVE CLEARING AND GRUBBING
GR-1*	ROADWAY SOIL SURVEY

c. Once this is placed in the file, the Index will be modified within the actual text file and not in the ORD dgn file. To get to the Index text file, from within *FDOT Linked Data Manager*, right-click on the Link and select **Open Source**.

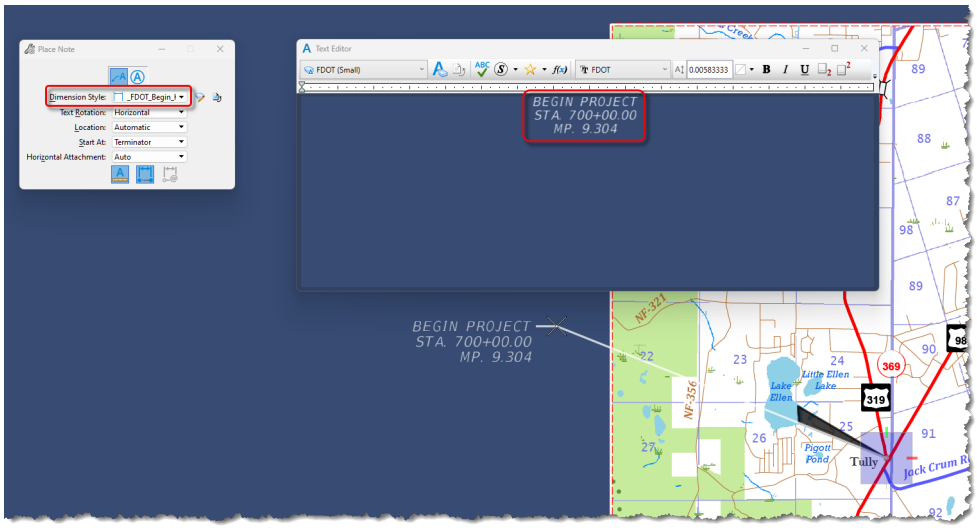


Exercise 1.4 *Place the Project Location*

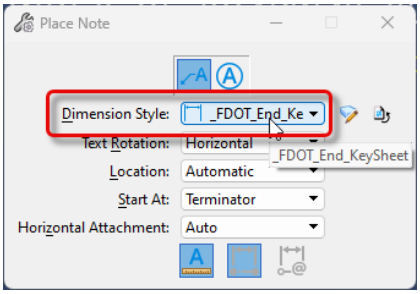
1. From the **Home** tab in the **Actions** group, set the level to TextLabel.
2. From the **Drawing Production** Tab, select **Place Note.**
3. Set the *Place Note* Parameters as shown below, with the *Dimension Style* set to **_FDOT_Key_Sheet_ Locate**:
4. In the Text Editor, set the Text Style to FDOT (Small) and then type LOCATION OF PROJECT. Select the general project location on the Florida map, position the label, and data point again to place it. The label should display as shown below.



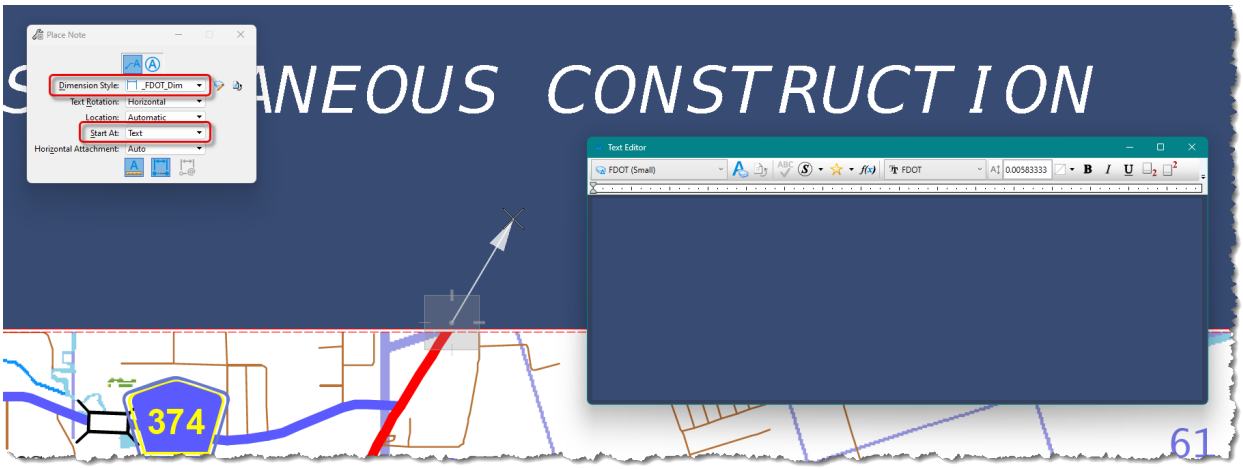
5. With the same tool (Place Note), change the Dimension Style to _FDOT_Begin_KeySheet. Then, in the Text Editor type the BEGIN PROJECT stationing and mile post, and data point to place it.



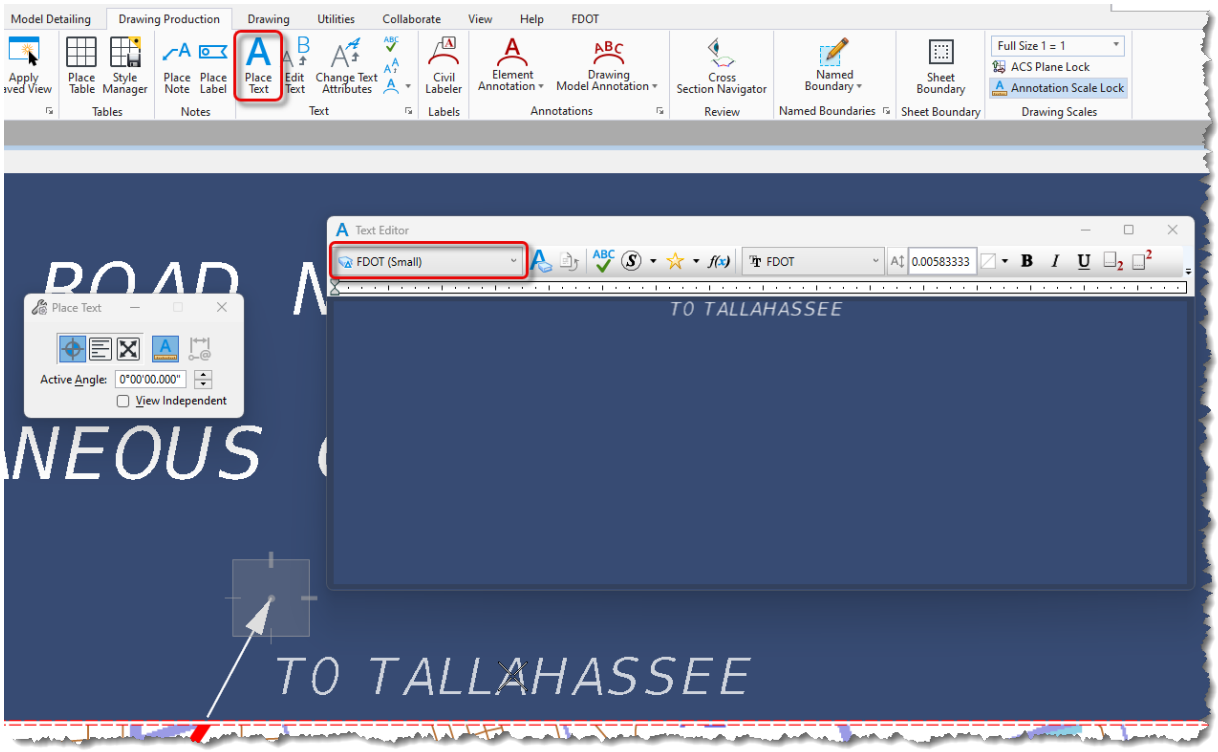
6. Repeat step #5 to place the END PROJECT label changing the Dimension Style to _FDOT_End_ KeySheet.



7. To place the arrows pointing to the nearest city, use the same tool (Place Note), change the Dimension Style to _FDOT_Dim and the Start At to Text. Then, leave the Text Editor blank, and data point to place the arrow.

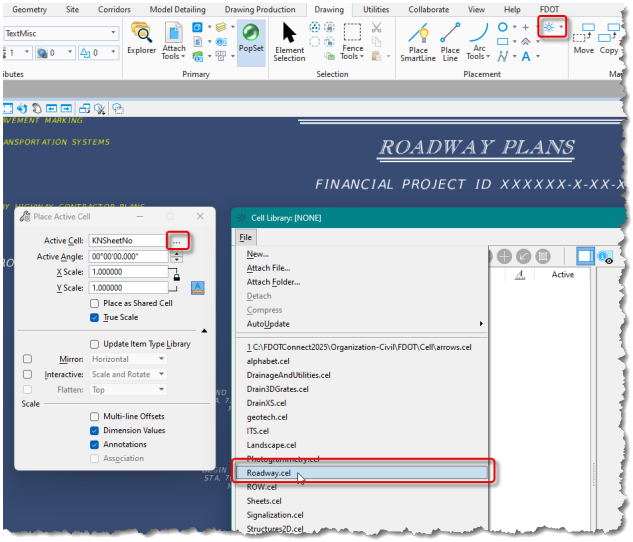


8. To place the text beside the arrow, use the Place Text tool and set the Text Style to FDOT (Small). Then type the name of the city and data point to place it.

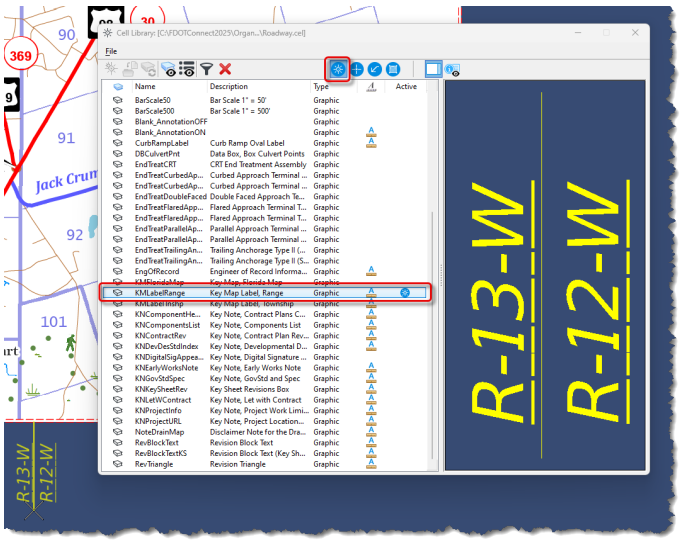


Exercise 1.5 *Place Range, Township, and North Arrow Cells*

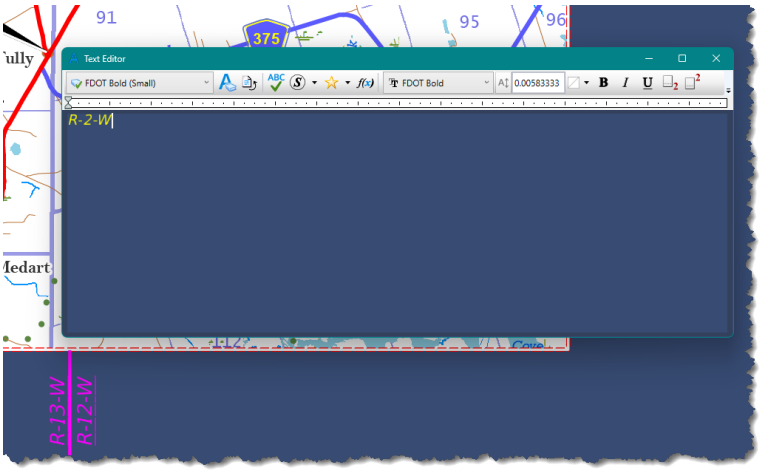
1. From the Drawing tab in the Placement group, select Cells. From the Active Cell field, click on the Browse button (the ellipsis) to bring up the Cell Library. Click on File and select the *Roadway.cel.*



2. From the *Roadway.cel* library double click on the **KMLabelRange** to make it the *Active Cell*, then data point to place it.



3. Once placed, double click on the range cell to bring up the *Text Editor* to modify it.

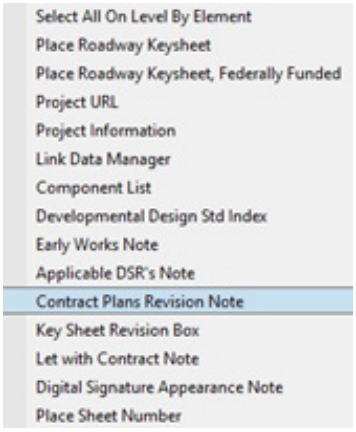


4. Repeat steps #1 & #2 to place the township cell (**KMLabelTnshp**) and the north arrow cell (**ArrNorthPlan**).

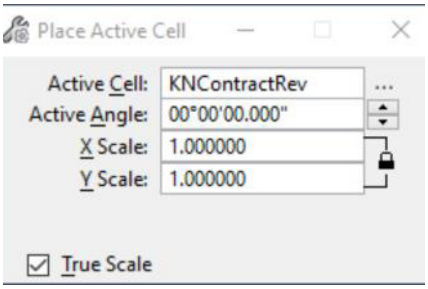
Exercise 1.6 *Place the Contract Revision Note (Optional)*

The Contract Plans Revision Note is only placed into the file to document which Component and which Sheets have been revised throughout the project. If there are no revisions this is not required.

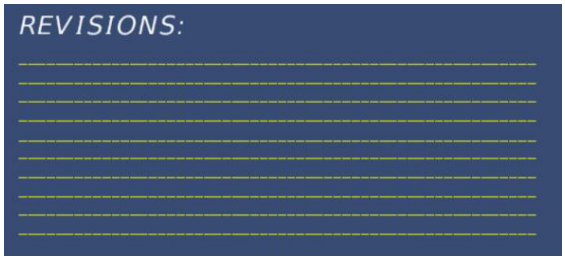
1. With the **Element Selection** tool active, right-click and hold to bring up the Context Menu. On the Context Menu, select **Contract Plans Revision Note**.



2. The MicroStation *Place Active Cell* command launches with **KNContractRev** set as the *Active Cell*.

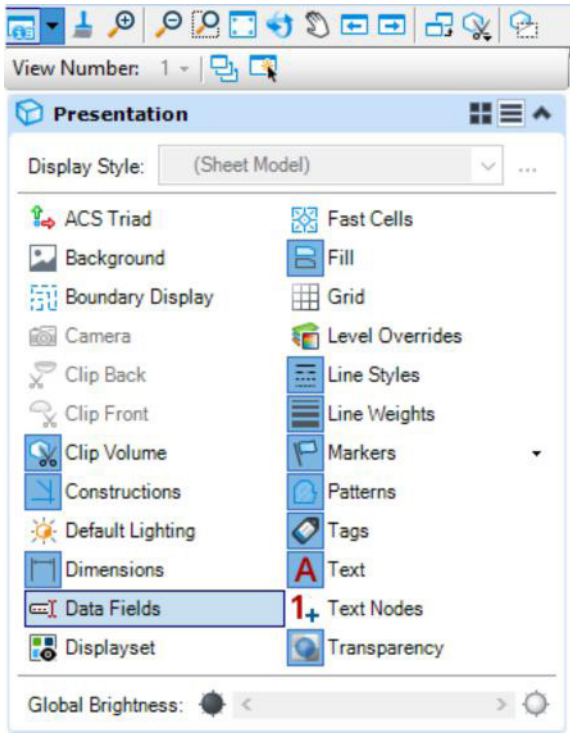


3. Data point to the lower left corner of the Key Sheet border. The Note should display as shown.



4. Select the **Edit Text** tool to enter the Financial Project ID, 220495-5-52-01 as well as the Revision Number, the Component Set, the Revised Page Numbers, and Date of Revision. See below.

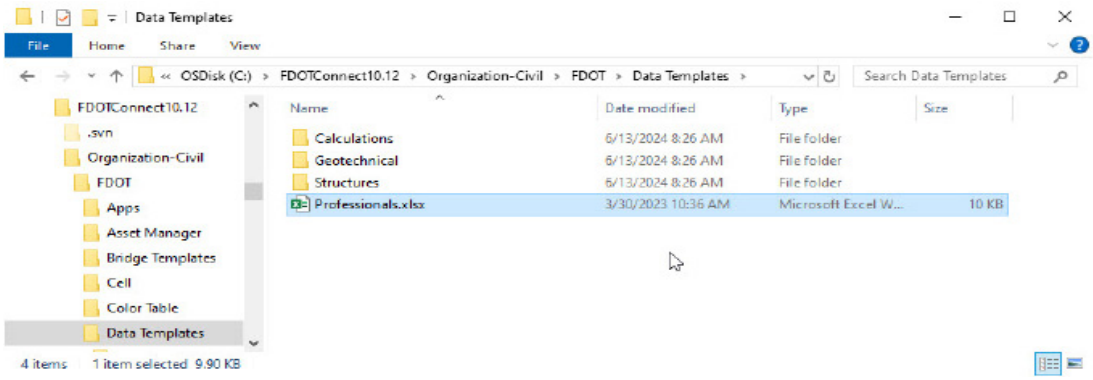
5. Go to the MicroStation **View options** and turn off **Data Fields**.



6. **Fit View** to center the sheet.

This exercise will demonstrate how to use the Plan Set Manager in Single Sheet mode.

1. Open a Windows Explorer dialog and navigate to the C:\FDOTConnect10.10\Organization-Civil\FDOT\Data Templates folder. Copy the *Professionals.xlsx* file from here to the local project directory, C:\Worksets\FDOT\22049555201\Data.

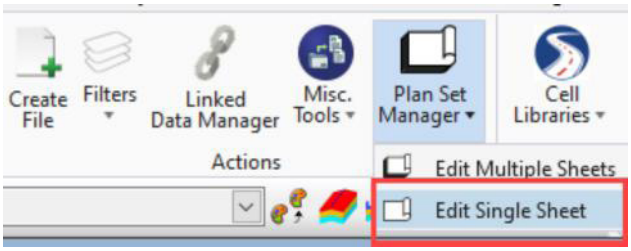


NOTE ***A District or Company can create a custom spreadsheet and save it in <server:>\FDOTConnect2024\Workspaces\FDOT\Standards\Data for common access.***

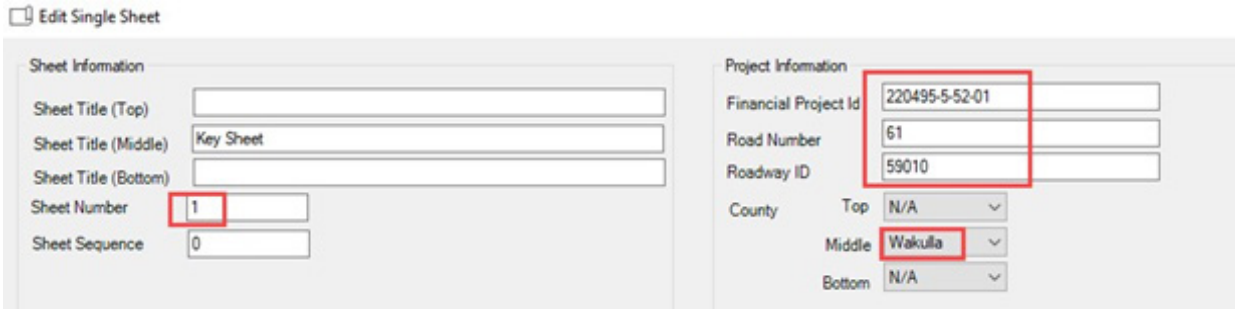
2. Open the copied *Professionals.xlsx* file and fill out as shown below. For "ProfessionalType," be sure to choose a selection from the drop-down list. Save and close the file when finished.

	A	B	C	D	E	F	G	H	I	J
1	Name	LicenseNumber	ProfessionalType	Company	Street	City	State	Zip	Phone	Fax
2	Christopher Thorp	12345	Engineer of Record	FDOT	605 Suwannee St	Tallahassee	FL	32399	850-123-4567	
3										
4										
5										

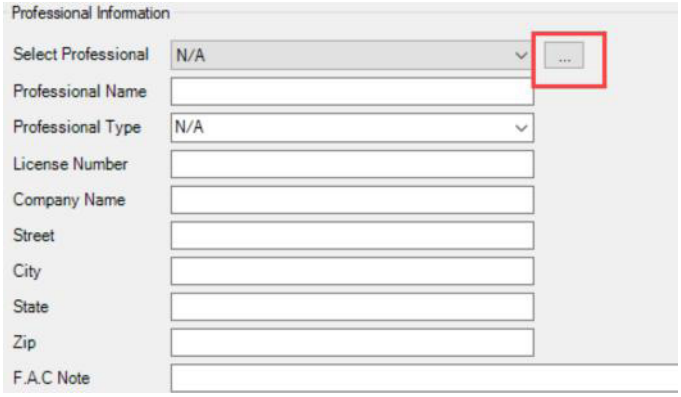
3. From the **FDOT** tab, select **Edit Single Sheet** from the **Plan Set Manager** drop-down button.



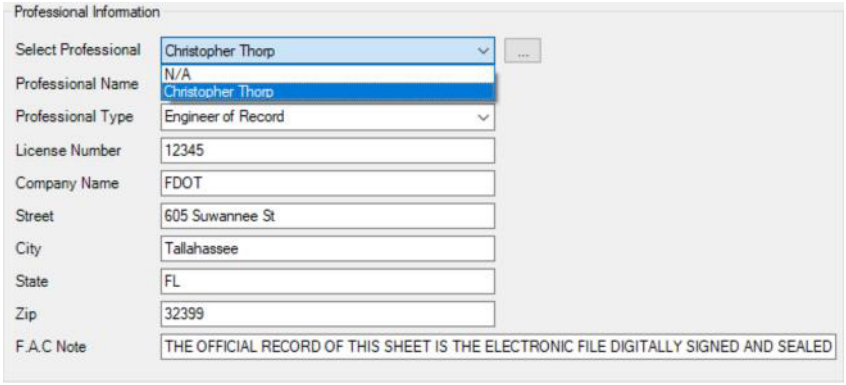
4. Fill out the *Sheet Information* on the *Edit Single Sheet* dialog, as shown below.



5. In the *Professional Information* section, click on **Ellipsis** button to the right of the *Select Professional* drop-down.



6. Browse to the *Professionals.xlsx* file within the Workset and **Open**. From the *Select Professional* drop-down. select Professional's name that was saved into the file.



7. Click **OK** to apply the information to the sheet.

2 Signature Sheet

All projects must be signed and sealed by the Engineer of Record. Therefore, each project requires a Signature Sheet. This chapter will show the tools used to correctly create a signature cell and sheet. For more information about signature sheets and their requirement see ***Part 9, Chapter 910*** of the ***FDM***.

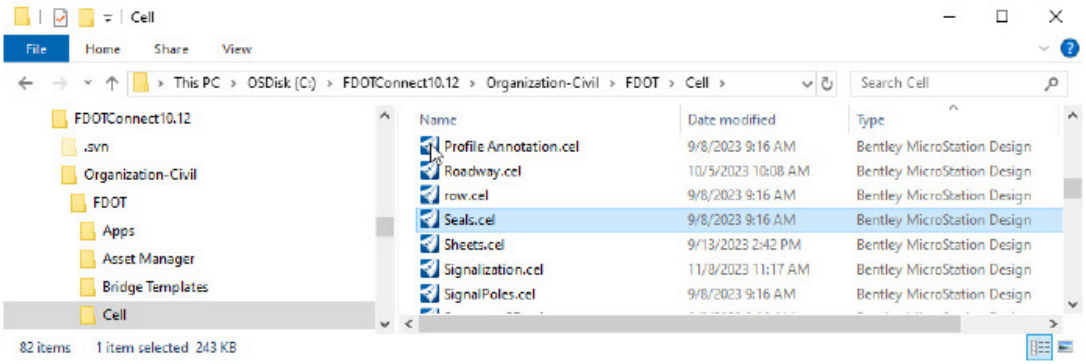
OBJECTIVES

- Create Custom Signature Cells
- Create the Signature Sheet

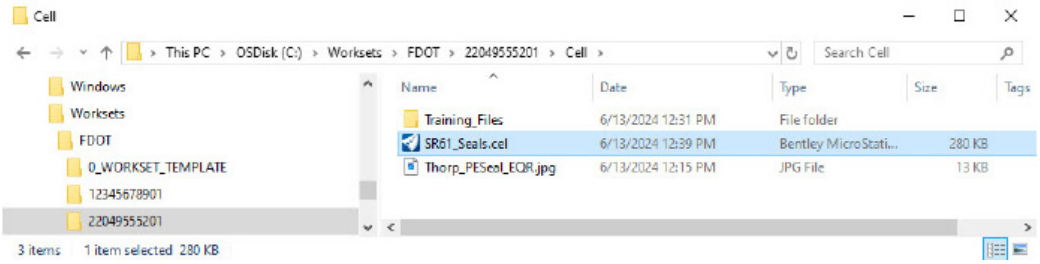
EXERCISE OVERVIEW

Exercise 2.1 *Creating Custom Signature Cells*

1. Open a Windows Explorer dialog and navigate to the C:\FDOTConnect2024\Organization-Civil\FDOT\Cell folder.



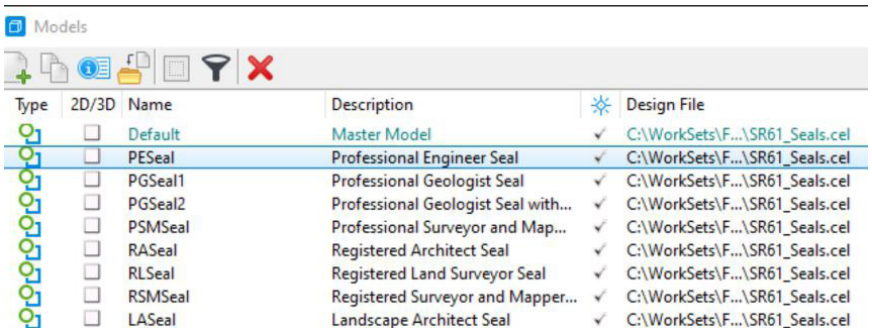
2. Copy the *Seals.cel* from this directory to the project directory C:\Worksets\FDOT\22049555201\Cell and name it *SR61_Seals.cel*. Overwrite existing file if necessary.



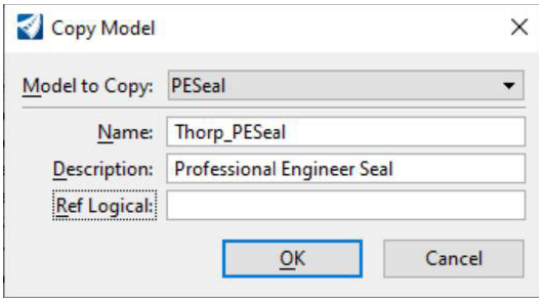
NOTE ***A District or Company can create a custom library and save it in <server:>\ FDOTConnect2024\Workspaces\FDOT\Standards\Cell for common access.***

3. Use the **FDOTConnect** icon to launch ORD and open the *SR61_Seals.cel* file, within the 22049555201 Workset.

4. On the **Home** tab select **Models** from the **Primary** group. The *Models* dialog displays.



5. Right-click on the **PESeal** model and select **Copy**. Change the Model *Name* to **YourName_PESeal** and update the *Description*, then click **OK**. The created model opens.

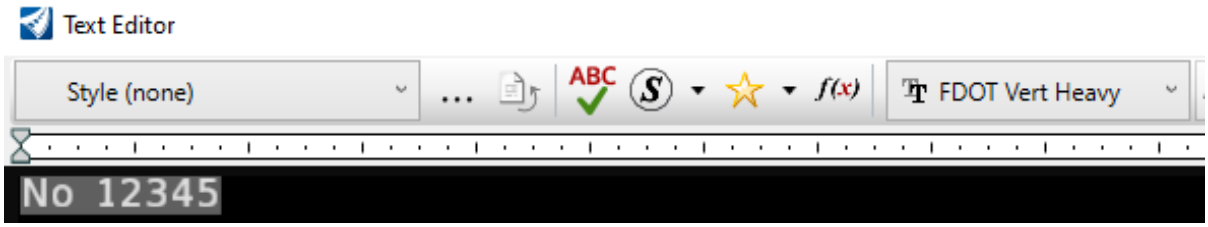


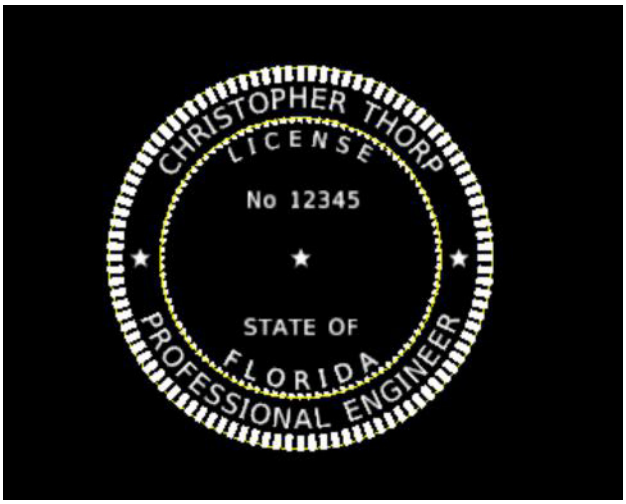
6. From the **Drawing Production** tab, select **Edit Text**.

7. Select the text SIGNATURE NAME to edit.

8. In the *Text Editor* dialog, enter your name and data point to accept.

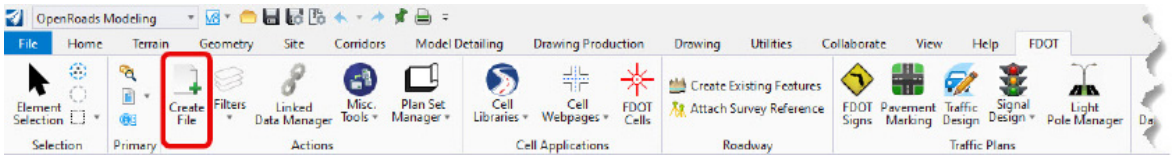
9. Next, select the LICENSE No text and enter the P.E. number 12345 and data point to accept.



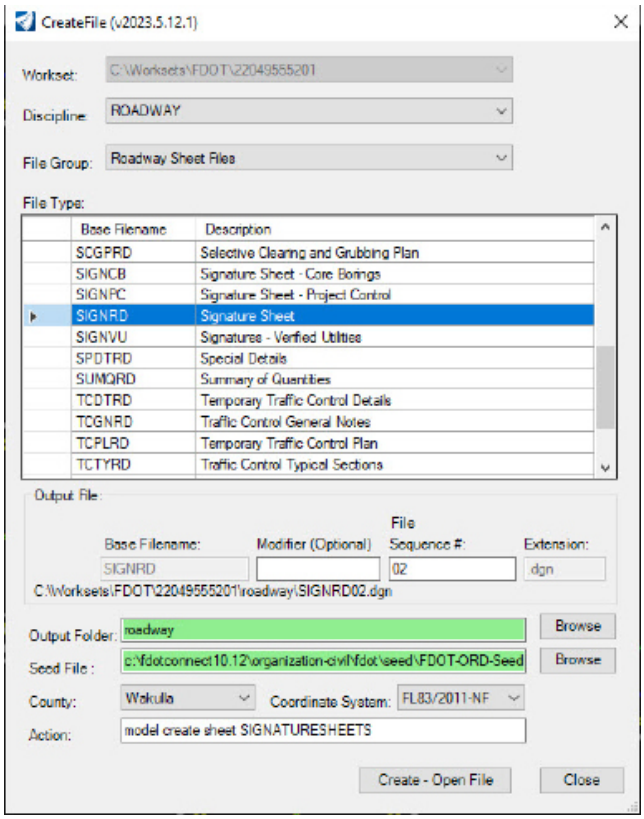


Exercise 2.2 *Creating the Signature Sheet*

1. On the OpenRoads Modeling Workflow, select **Create File**, from the **FDOT** Tab.

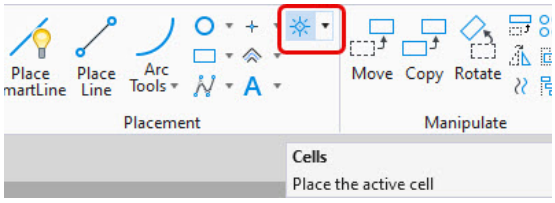


2. The *Create File* dialog displays. On the *Create File* dialog set the *Discipline* to **Roadway** and *File Group* to **Roadway Sheet Files.** From the *File Type* list, select **SIGNRD**. On the *Output File* section of the dialog, be sure to set the *County* to **Wakulla**. Once everything is set up to match the image below, click **Create – Open File** to create and open the Signature Sheet file. Click **Close** to close the *Create File* dialog.



► *Placing the Signature Information (Part 1)*

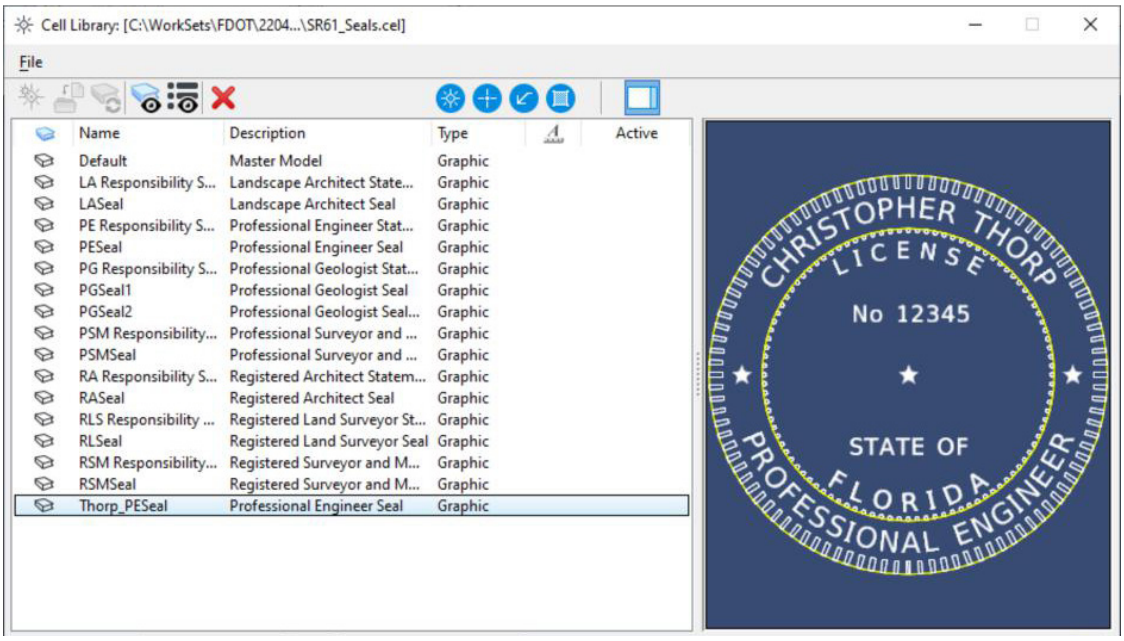
1. From the **Drawing** tab, select the **Place Active Cell** tool.



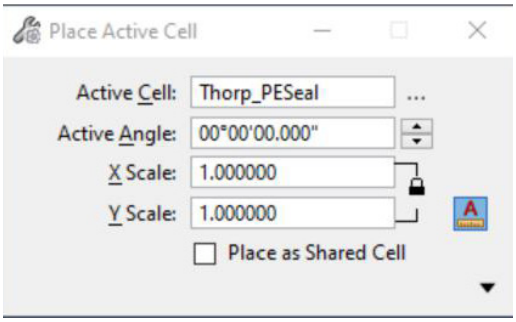
2. From the *Place Active Cell* dialog, select Browse Cells(s). this will open the *Cell Library* dialog.

3. From the *Cell Library* dialog, select **File > Attach File...** and navigate to the *SR61_Seals.cel* file and click **Open.**

4. From the *Cell Library* dialog, highlight the newly created seal cell and double-click on the **YourName_PESeal**.



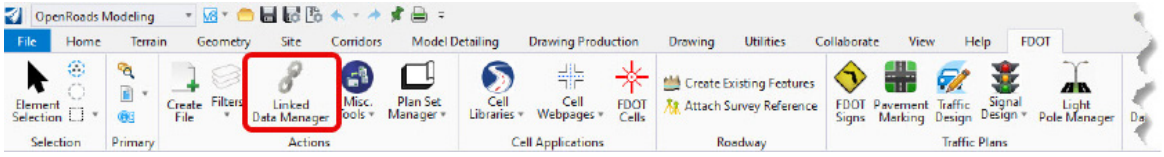
5. This sets **YourName_PESeal** as the *Active Cell.* Set *Scale* of the cell to **1.0.**



6. Data point to place the cell in the file. Place the cell in the upper left corner of the sheet. Reset when finished to get out of the *Place Active Cell* command.

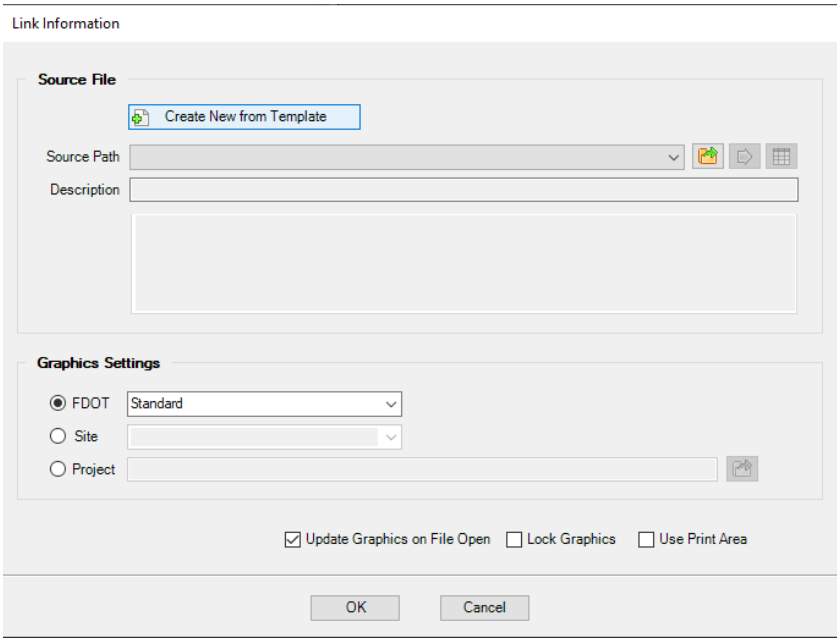
► *Placing the Signature Information (Part 2)*

1. The Statement of Responsibility is placed using Linked Data Manager. From the **FDOT** tab select **Linked Data Manager**.



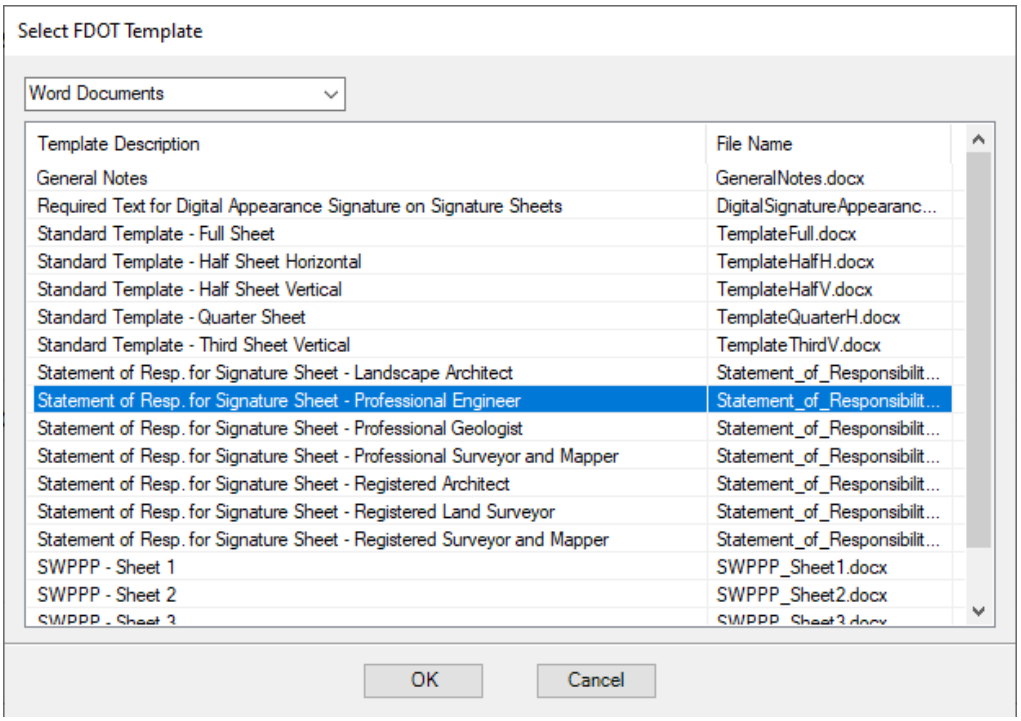
2. The *FDOT Linked Data Manager* dialog displays. Select the **Create New Link** icon.

3. The *Link Information* dialog displays. Click on the **Create New from Template** button.



4. The *Select FDOT Template* dialog displays.

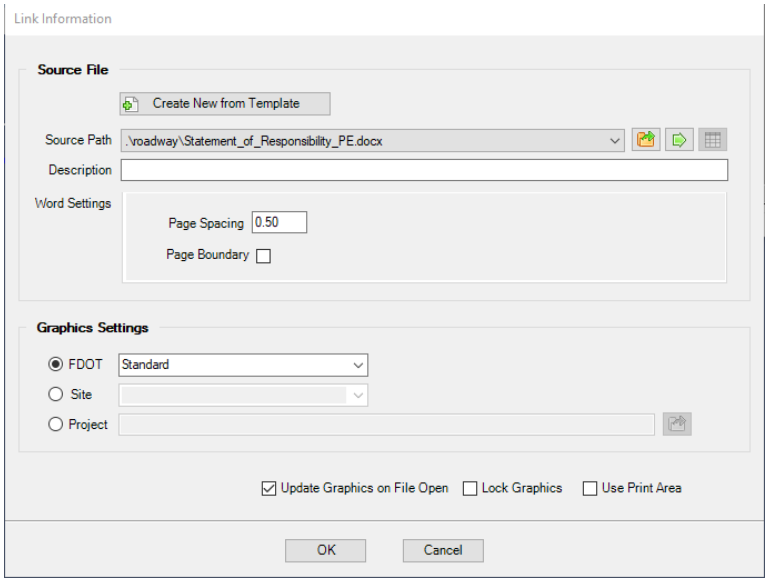
   a. Set the drop down to **Word Documents** and select the **Statement of Resp. for Signature Sheet – Professional Engineer** Template. Click **OK**.



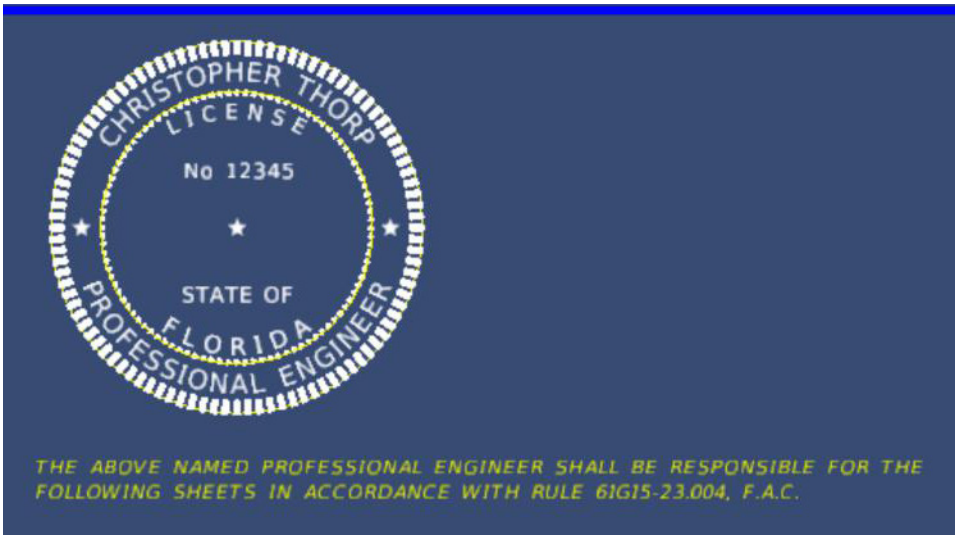
   b. The *Save File* dialog displays. Browse to the C:\Worksets\FDOT\22049555201\Roadway folder, accept the default filename and **Save** the file.

5. From the *Link Information* dialog, toggle Off the *Page Boundary* check box and click **OK**.

NOTE ***The file name of the document can be changed to reflect the Professional's name.***



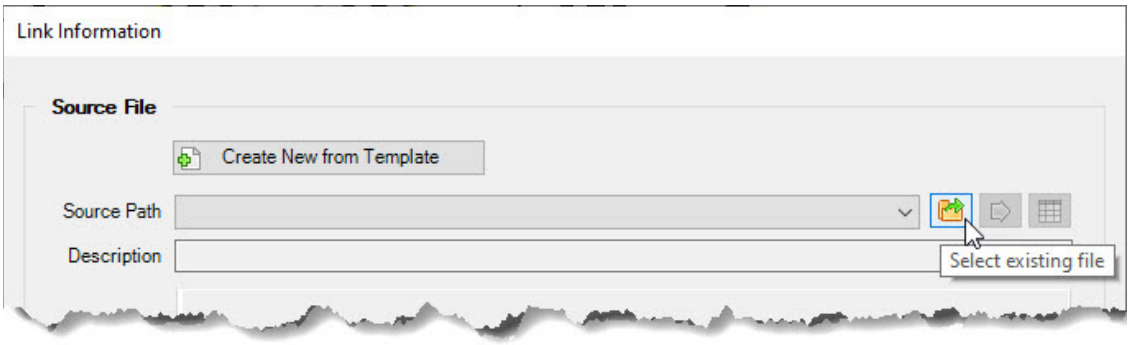
6. With the Statement of Responsibility Note attached to cursor, data point under the seal cell to place the link. The link is created and listed in the *FDOT Linked Data Manager* dialog.



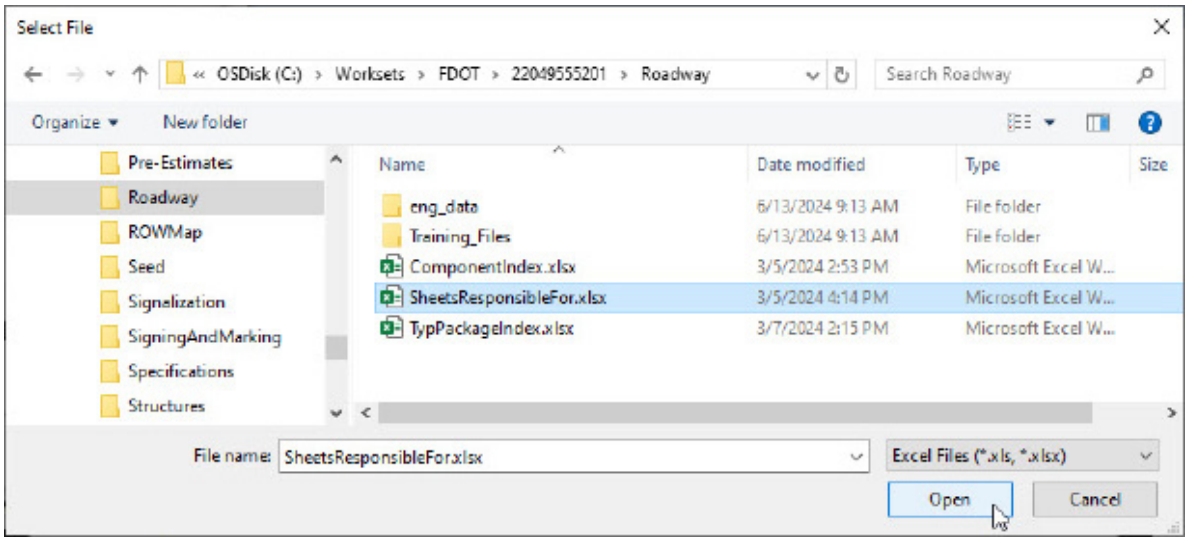
► *Placing the Signature Information (Part 3)*

The list of sheets the Engineer is responsible for is also placed using **Linked Data Manager**.

1. Navigate to the C:\Worksets\FDOT\22049555201\Roadway folder. Copy the *ComponentIndex.xslx* file and paste it into the Roadway folder with the name *SheetsResponsibleFor.xlsx.*
2. From the **FDOT** tab select **Linked Data Manager.**
3. From the *FDOT Linked Data Manager* dialog, click the **Create New Link** button.
4. The *Link Information* dialog displays. Click the **Select Existing File** button.

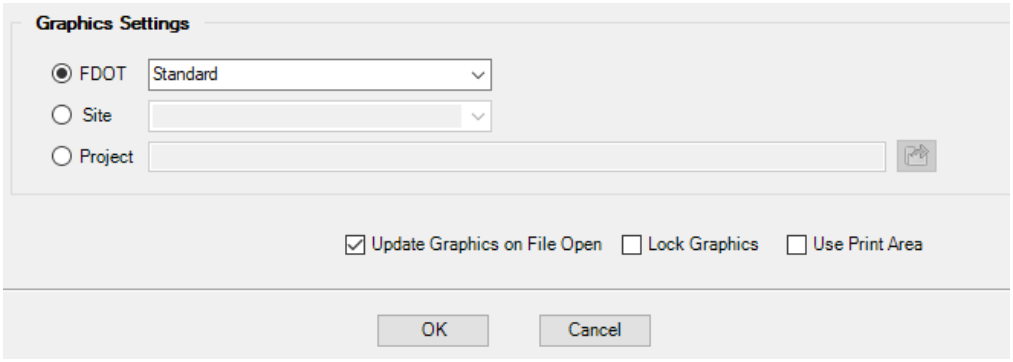


5. Select File displays. Select the *SheetsResponsibleFor.xlsx* and click the **Open** button.

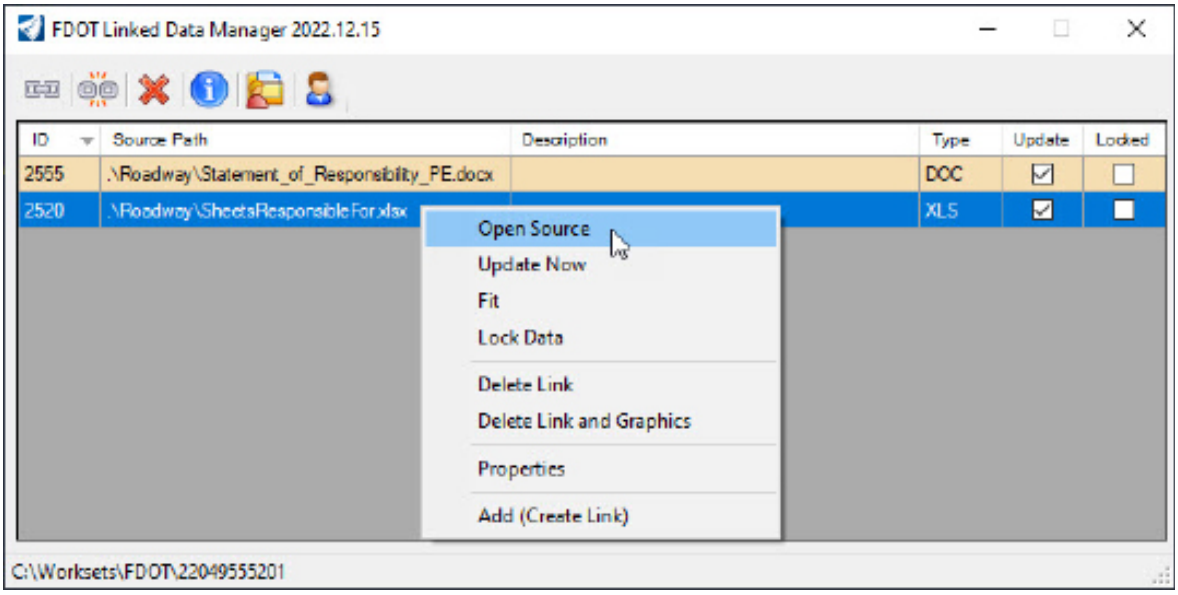


6. From the *FDOT Linked Data Manager* dialog, for the *Excel Settings*, set the *Worksheet* to **Sheet 1** as shown below.

7. Set the *Graphic Settings* as shown below. Click the **OK** button.



8. Data point to place the text under the Statement of Responsibility Note in the MicroStation file.
9. From the *FDOT Linked Data Manager* dialog, right-click on the *SheetsResponsibleFor.xlsx* link and select **Open Source.**

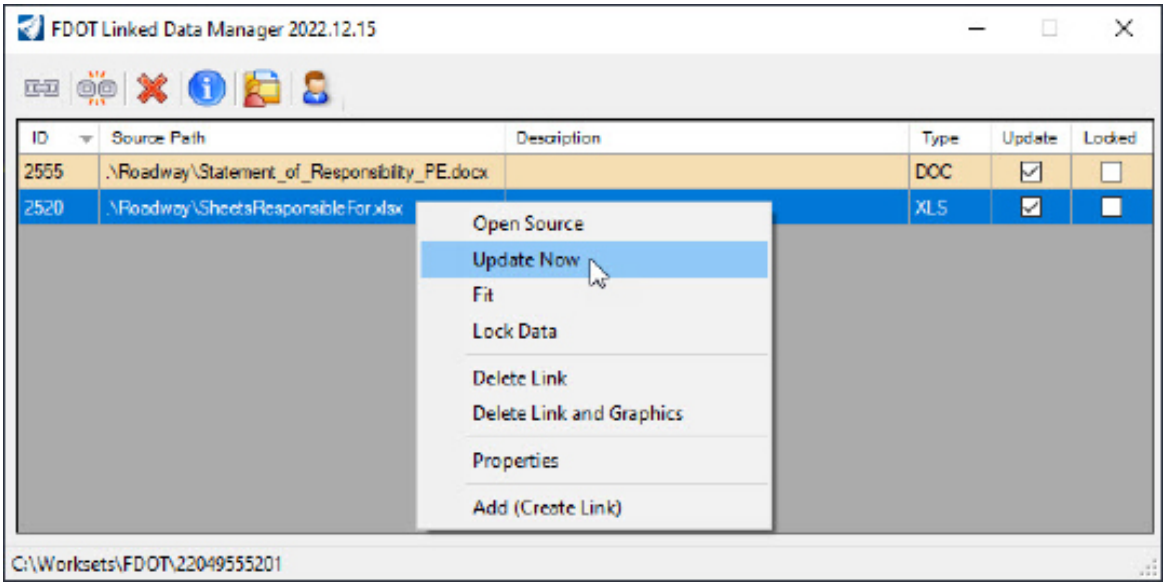


10. The Excel file opens. Insert a row and add the title ROADWAY PLANS**.**

2	ROADWAY PLANS	
3	1	KEY SHEET
4	4 - 5	TYPICAL SECTIONS
5	6	CROSS SLOPE CORRECTION DETAILS
6	7 - 9	MODEL MANAGEMENT
7	10	PROJECT CONTROL
8	11	GENERAL NOTES
9	12 - 14	PLAN/PROFILE
10	19 - 26	TEMPORARY TRAFFIC CONTROL PLANS
11		

11. Save and close the Excel file.

12. From the *FDOT Linked Data Manager* dialog, right-click on the *SheetsResponsibleFor.xlsx* link and select **Update Now.**



13. The link will be updated in the MicroStation file to reflect the changes made.

► *Placing the Signature Information (Part 4)*

The Digital Signature Appearance information text is placed using **Linked Data Manager**.

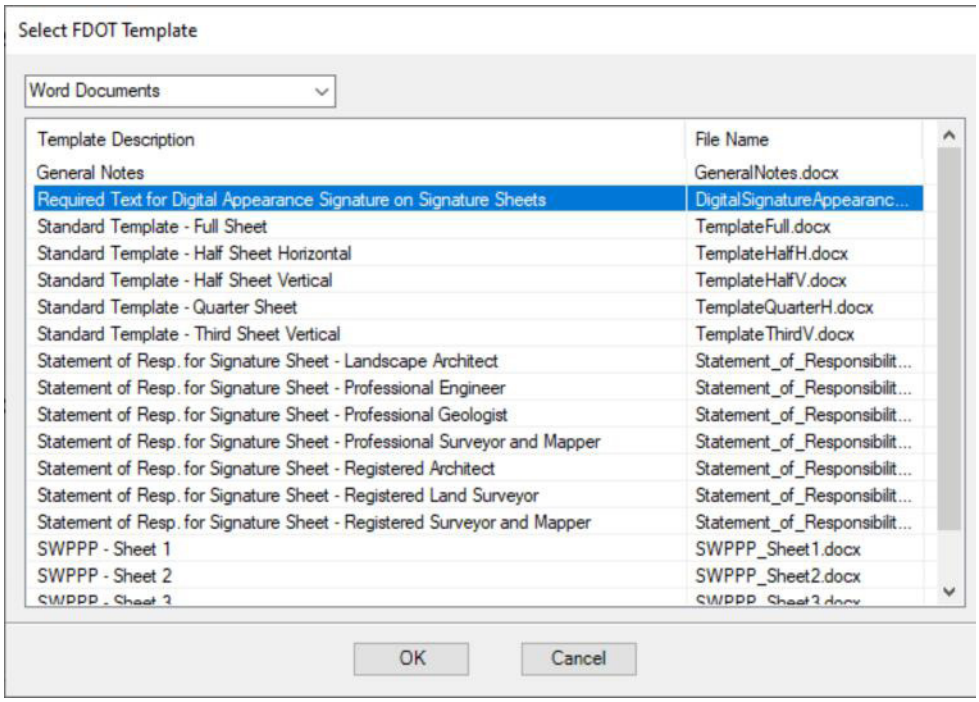
1. From the **FDOT** tab select **Linked Data Manager.**

2. The *FDOT Linked Data Manager* dialog displays. Select the **Create New Link** icon.

3. The *Link Information* dialog displays. Click on the **Create New from Template** button.

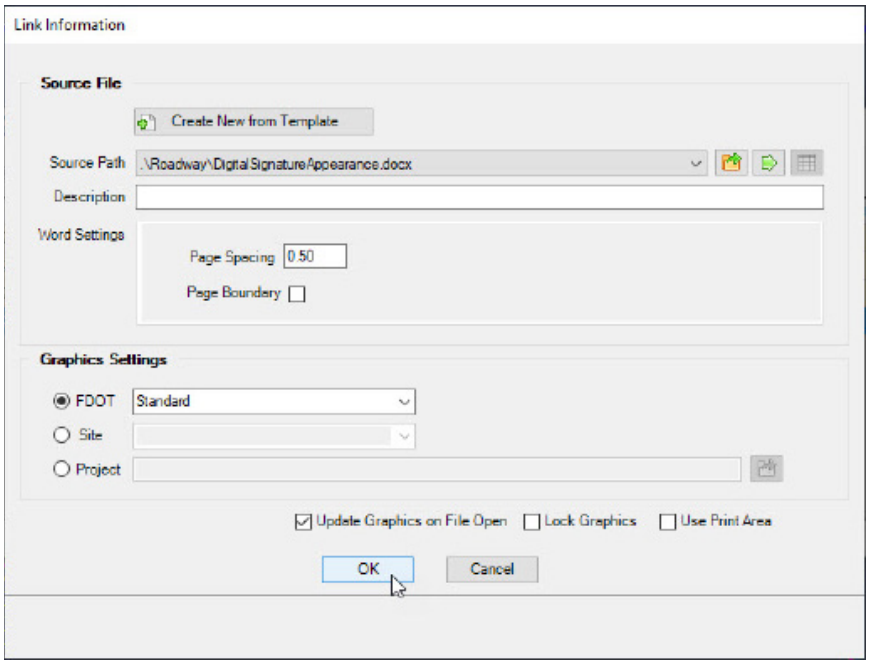
4. The *Select FDOT Template* dialog displays.

   a. Set the drop down to **Word Documents** and select the **Required Text for Digital Appearance Signature on Signature Sheets** template. Click **OK.**

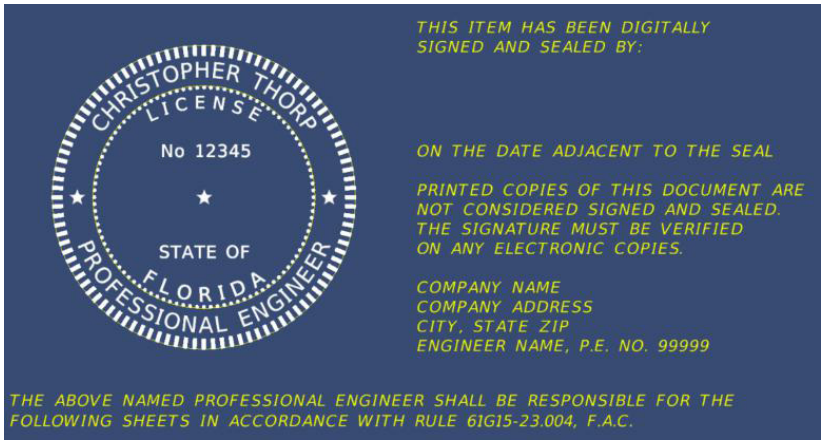


   b. The *Save File* dialog displays. Browse to the C:\Worksets\FDOT\22049555201\Roadway folder, accept the default *filename* and **Save** the file.

5. From the *Link Information* dialog, toggle off the *Page Boundary* check box and click **OK.**



6. With the Digital Signature Appearance Note attached to cursor, data point in the MicroStation file to the right of the seal cell to place the link. The link is created and listed in the *FDOT Linked Data Manager* dialog.



7. To edit the Digital Signature Appearance Note:

   a. Go to the *FDOT Linked Data Manager* dialog, right-click on the link and select **Open Source.**

   b. The Word document displays. At the bottom portion of the note, input the correct company information. See below:

      FDOT ENGINEERING, INC.
      605 SUWANNEE STREET
      TALLAHASSEE, FL 32399
      CHRISTOPHER THORP, P.E. NO. 12345

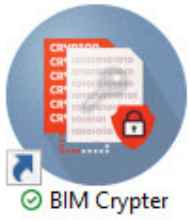
   c. **Save** the file and close it.

8. From the *FDOT Linked Data Manager* dialog, select the link again, right-click and select **Update Now.**

9. Use MicroStation **Fit View** and then select **File > Save Settings.**

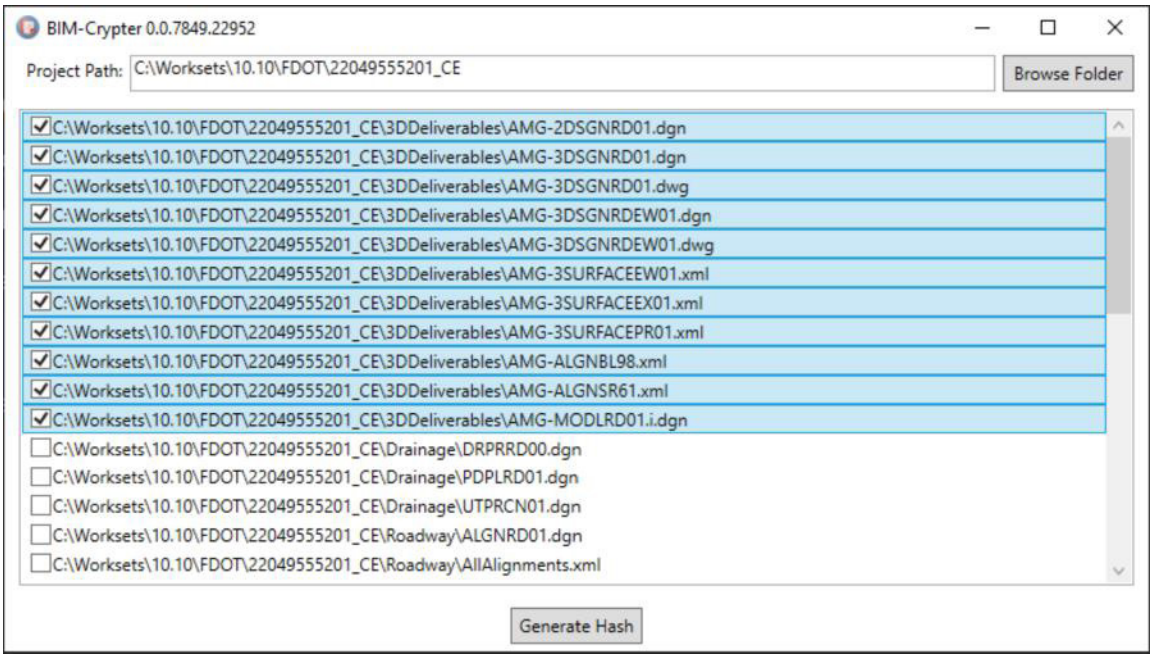
Exercise 2.3 *Creating the BIM Manifest*

1. From the FDOTConnect desktop folder, open the **BIM Crypter** tool.



2. On the *BIM Crypter* dialog, click **Browse Folder**, and browse to the C:\Worksets\FDOT\22049555201 folder and click **OK**.

3. With the Project Path set to the 22049555201 location, select the files to be included in the manifest. For this dataset, select all the AMG files.



4. Click **Generate Hash** to create the BIM File Manifest. Save this .xlsx file in the _Meta_Info folder.

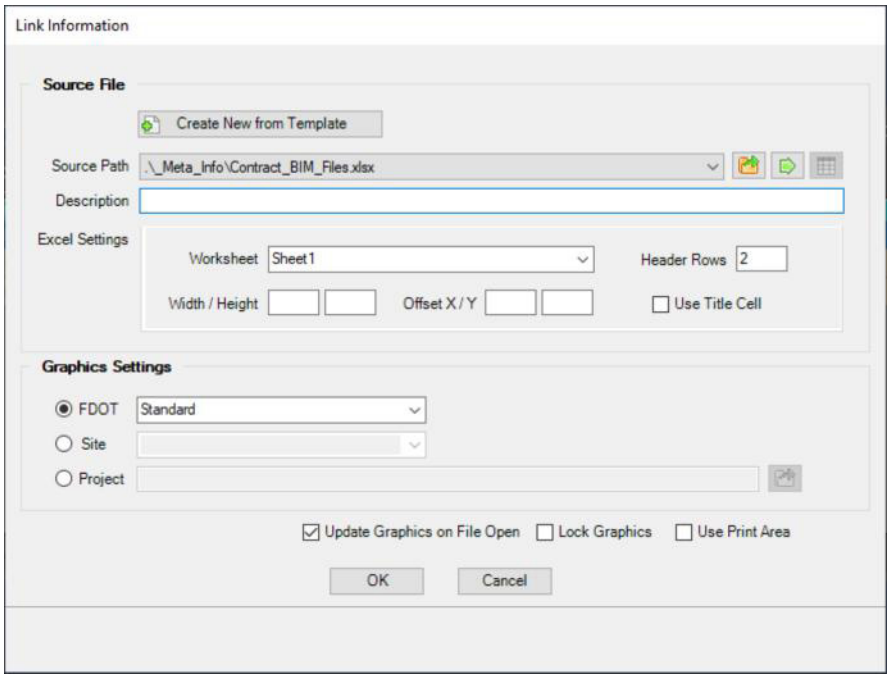
5. In the *SIGNRD01.dgn* file, open the **Linked Data Manager** tool from the **FDOT** tab.

6. The *FDOT Linked Data Manager* dialog displays. Select the **Create New Link** icon.

7. The *Link Information* dialog displays. Click the **Select Existing File** button.

8. *Select File* displays. Browse to the _Meta_Info folder and select the *Contract_BIM_Files.xlsx* file. Click the **Open** button.

9. For the *Excel Settings*, set the *Worksheet* to **Sheet 1**. Verify the *Link Information* dialog is set up as shown below and click **OK**.



10. With the table attached to the cursor, data point to place the table on the sheet.

NOTE ***For more information on the BIM Crypter tool, view the posted BIM Crypter Tools webinar at https://www.youtube.com/watch?v=oj-Gr2sNUI8***

3 Typical Sections

OBJECTIVES

- Create Roadway Typical Section Sheets for plans
- Create Typical Section Data Package

EXERCISES OVERVIEW

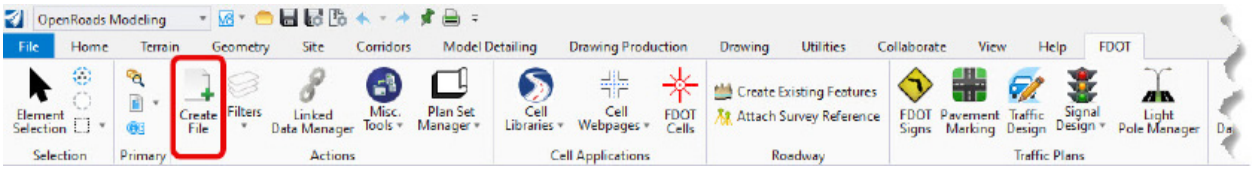
Exercise 3.1 *Creating the Roadway Typical Section Sheet*

The FDOT Workspace contains several Typical Sections that can be used and adjusted to suit the conditions of a particular project. For the purposes of this project and class, the New 4 Lane, Divided Urban Typical will be used. This Typical Section should be modified based on project specific requirements.

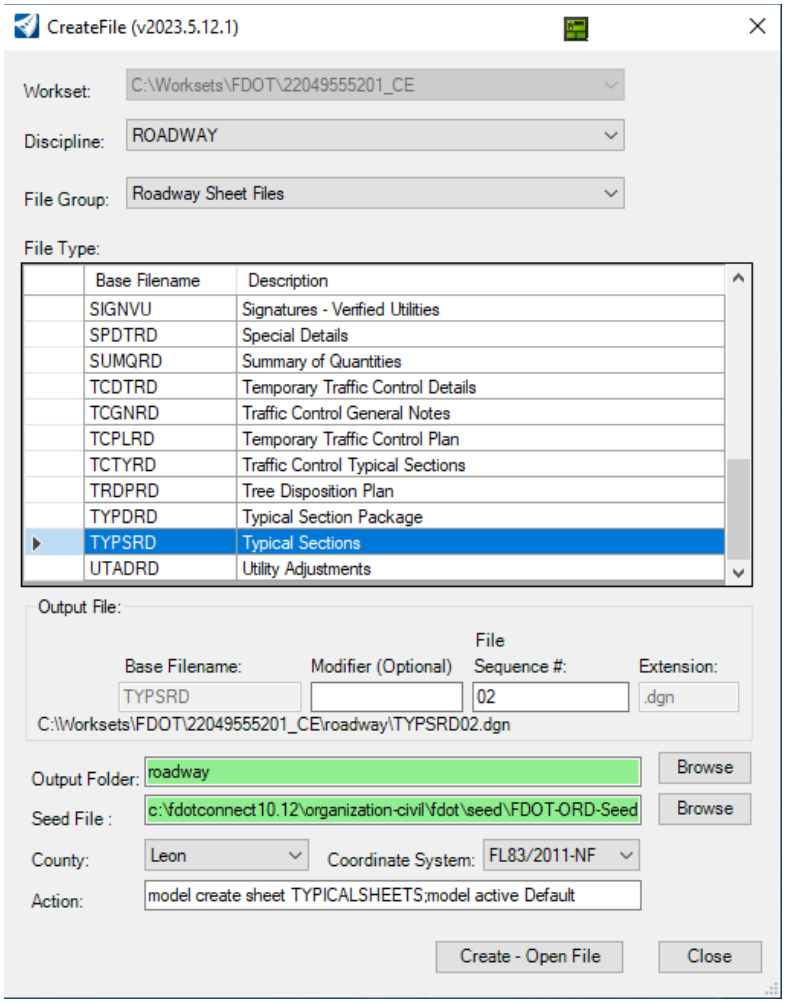
NOTE Due to time constraints of this course, the design modification of the Typical Section is assumed.

1. Use the FDOTConnect for OpenRoads Designer icon to launch ORD and open the C:\Worksets\FDOT\22049555201_*BlankFile.dgn* file.

2. On the **OpenRoads Modeling** Workflow, select **Create File,** from the **FDOT** Tab

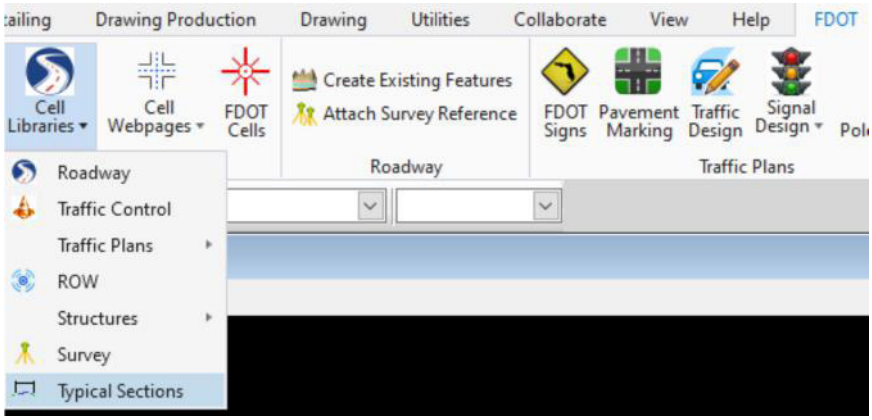


3. The *Create File* dialog displays. On the *Create File* dialog set the *Discipline* to **Roadway** and *File Group* to **Roadway Sheet Files.** From the *File Type* list, select **TYPSRD**. On the *Output File* section of the dialog, be sure to set the *County* to **Wakulla**. Once everything is set up to match the image below, click **Create – Open File** to create and open the Typical Section Sheet file.

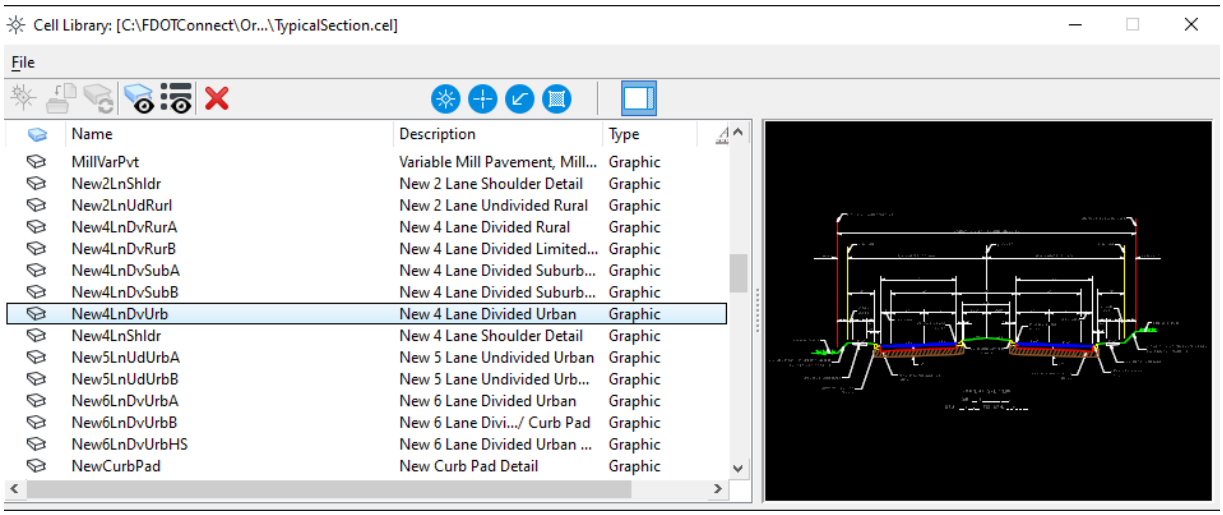


4. Click **Close** to close the *Create File* dialog.

5. From the **FDOT** Tab, select the **Typical Sections** cell library from the **Cell Libraries** drop down button.

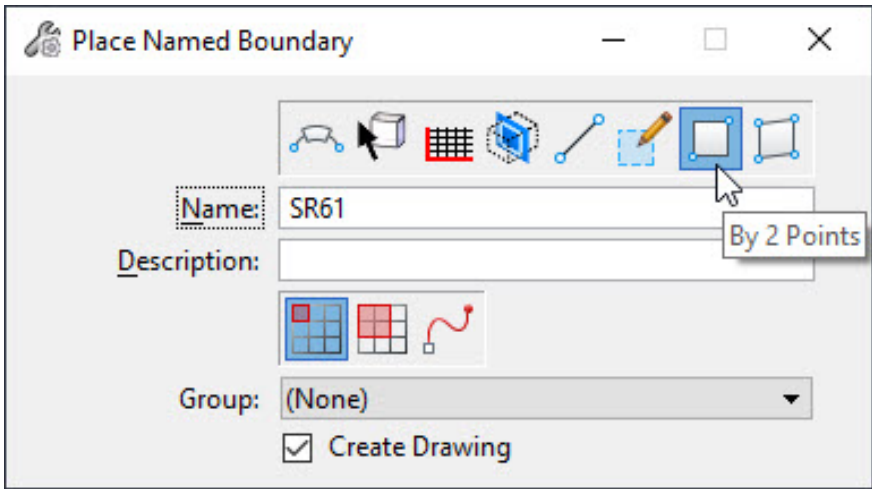


2. Find the **New4LnDvUrb** cell and double click. The MicroStation *Place Active Cell* command displays with **New4LnDvUrb** set as the *Active Cell.*

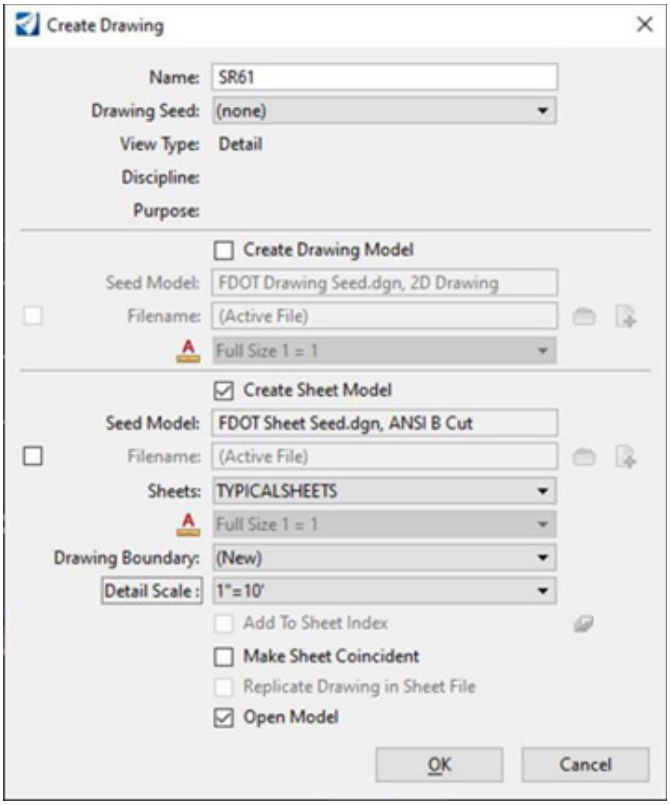


7. Set scale of the cell to **1.0**. Data point to place the cell in the file. Reset when finished to exit the *Place Cell* command. Click on **Fit View** to center the typical section in the view.

8. Select the **Home** tab in the **Attributes** tool group set the **Level** to **ClipDrawingBound_dp**. From the **Drawing Production** tab, select the **Place Named Boundary** tool and set the mode to By 2 Points and fill out the dialog as shown. Follow the prompts in the lower left corner to place the named boundary around the typical section cell.



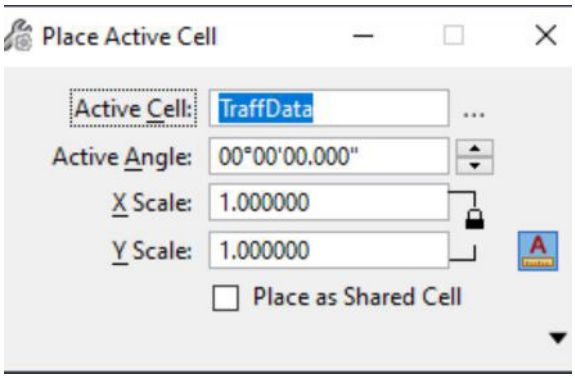
9. Once the Named Boundary is placed, fill out the *Create Drawing* dialog as shown to place the Typical Section on the plan sheet. Be sure to check on *Create Sheet Model*, set the *Sheets* field to **TYPICALSHEETS** (this model was created as part of the *Create File* process) and the *Detail Scale* to **1"=10'.**



10. In the sheet model, the Typical Section may need to be moved up on the sheet. This can be done from the *References* dialog by moving the reference created by the Named Boundary tool. There may also be other visual cleanup to be done on the Plan sheet, such as turning off the named boundary level and disabling the *Markers* within **View Attributes**.

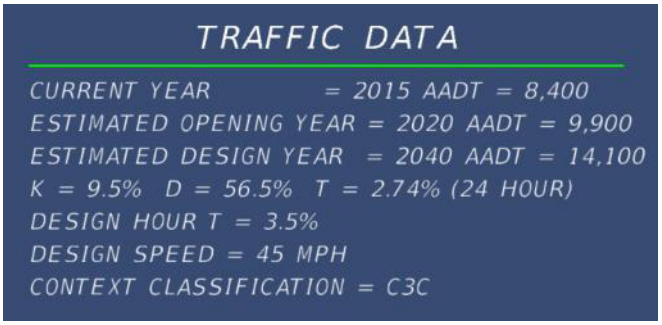
11. Continuing in the TYPICALSHEETS model, open the Typical Sections Cell Library. On the *Cell Library* dialog, double click on the cell **TraffData**. The MicroStation *Place Active Cell* command displays with **TraffData** set as the *Active Cell.*

12. Set *Scale* of the cell to **1.0.**



13. Data point to place the cell in the left bottom corner of the sheet. Reset when finished to get out of the **Place Active Cell** command.

14. Double-click on the text to enter the Traffic Data information as shown below.



15. Repeat steps 11 through 14 to place and edit the following cells with the information shown below. Place these cells in the middle of the sheet, under the *typical section.*

    a. Cell Name: NewOBGSPFC125

    - OPTIONAL BASE GROUP 6
    - TYPE SP STRUCTURAL COURSE (TRAFFIC B) (2 1/2")
    - FRICTION COURSE FC-9.5 (TRAFFIC B) (1") (PG 76-22)

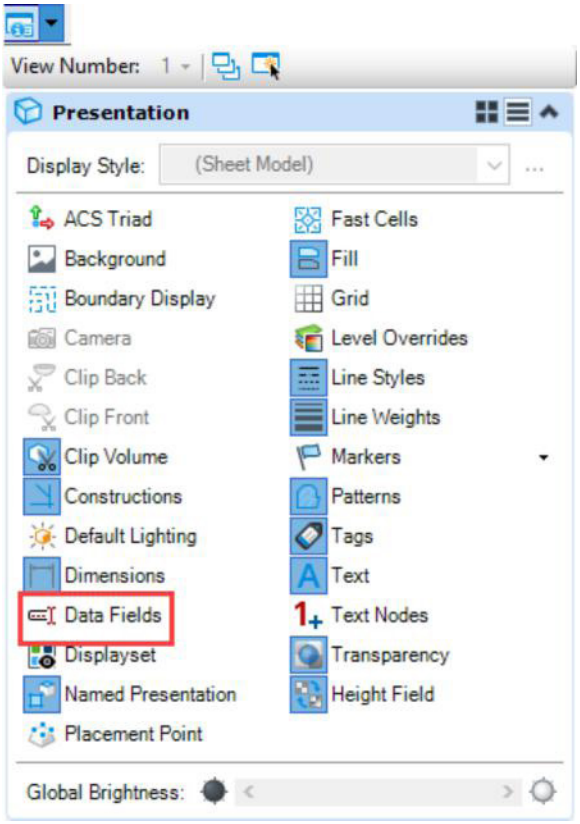
    b. Cell Name: MillPvt

    - MILL EXISTING ASPHALT
    - PAVEMENT FOR DEPTH (1")

    c. Cell Name: ResrPvtFC95

    - FRICTION COURSE FC-9.5 (TRAFFIC B) (1") (PG 76-22)

16. Go to the MicroStation **View Attributes** and turn **Off** the *Data Fields* option. Select **File > Save Setting.**

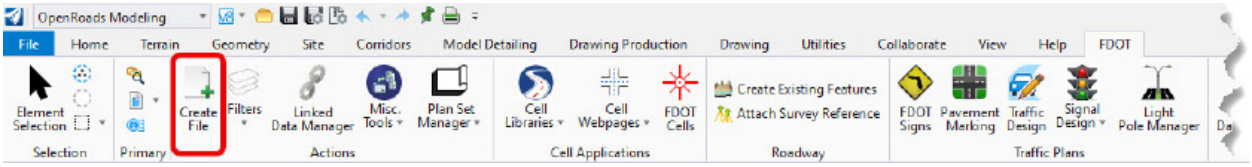


Exercise 3.2 *Creating the Typical Section Data Package*

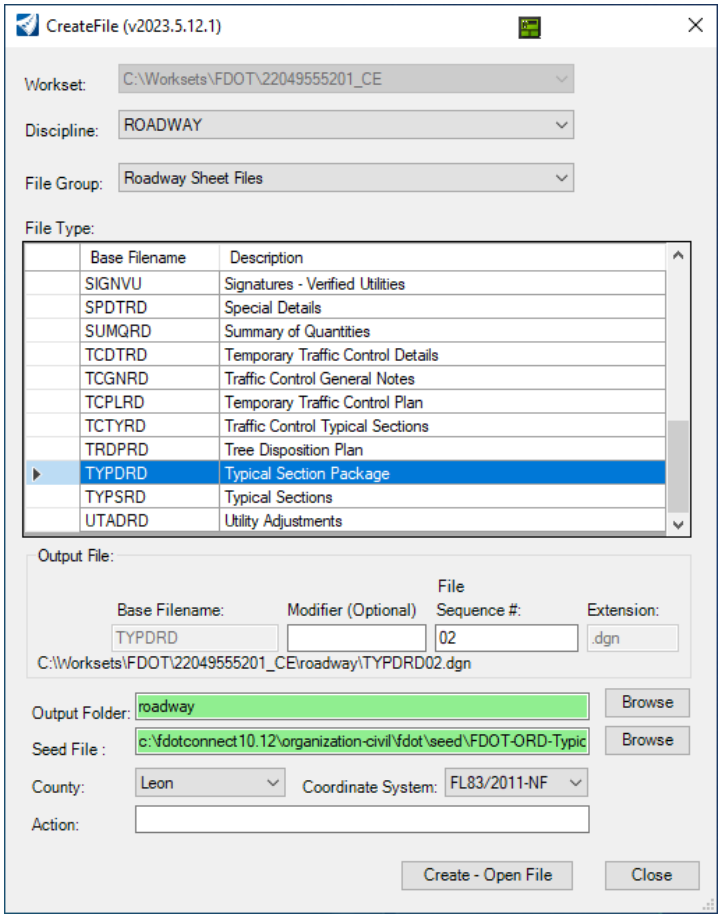
Typical Section Data sheets are used for what is called the “Typical Section Package”. This is done before the design starts but after the seed project is delivered from Florida Department of Transportation (FDOT). An approved Typical Sections Package must exist before the design on a project starts. This exercise will demonstrate how to create all the sheets needed for the package.

► *Data Package Cover Sheet:*

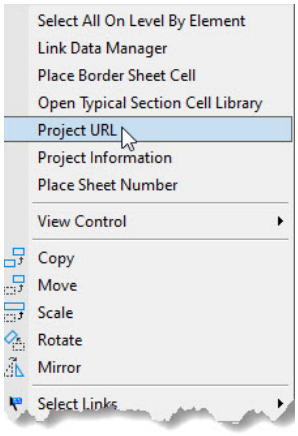
1. On the OpenRoads Modeling Workflow, select **Create File**, from the **FDOT** Tab.



2. The *Create File* dialog displays. On the *Create File* dialog set the *Discipline* to **Roadway** and *File Group* to **Roadway Sheet Files.** From the *File Type* list, select **TYPDRD**. On the *Output File* section of the dialog, be sure to set the *County* to **Wakulla**. Once everything is set up to match the image below, click **Create – Open File** to create and open the Typical Section Package file. Click **Close** to close the *Create File* dialog.



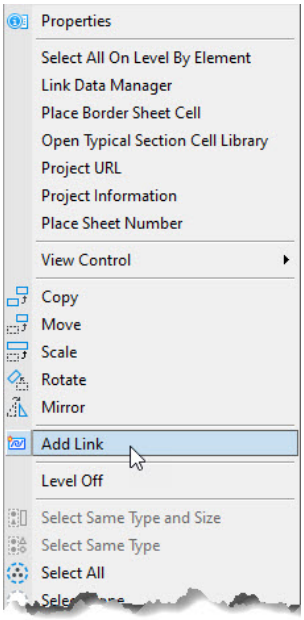
3. Right click and hold to bring up the Context Menu. Select **Project URL** to open the *Place Active Cell* dialog with the **KNProjectURL** cell set as the *Active Cell*. Snap to the upper left corner of the Project Information box to place the cell.



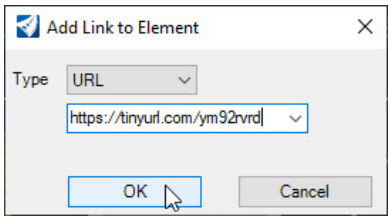
NOTE ***The cell was created using this dataset project as an example. Refer to FDM Chapter 910.2.2 for more information on how to create a project specific URL.***

a. Double click on the tinyurl text, to open the *Text Editor* dialog. Copy the web address text and close the *Text Editor* dialog.

b. Hover over the tinyurl address, open the Context Menu and select *Add Link* from the list. This will open the *Add Link to Element* dialog.

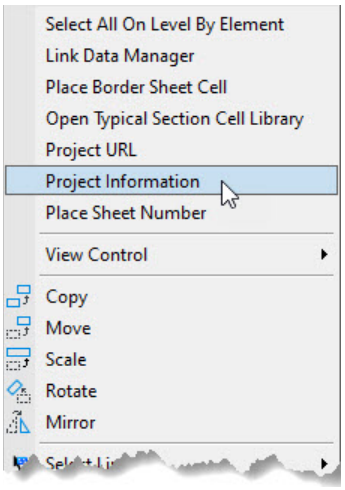


c. On the *Add Link to Element* dialog, set the *Type* to URL and paste in the tinyurl web address copied from Step a. Click **OK** to add the link to the Project Location URL text.



4. Place the Project Information cell.

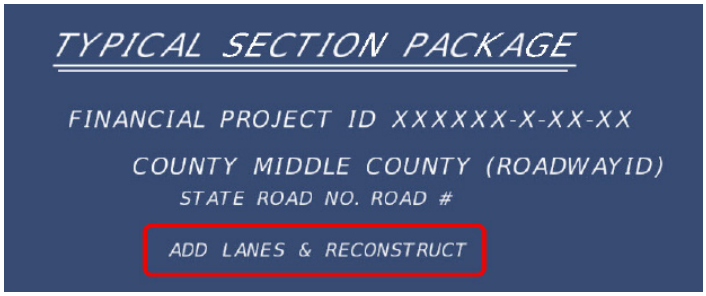
   a. Bring up the Context Menu and select Project Information to open the *Place Active Cell* dialog with the **KNProjectInfo** cell set as the *Active Cell*. Snap to the upper left corner of the Project Information box to place the cell.



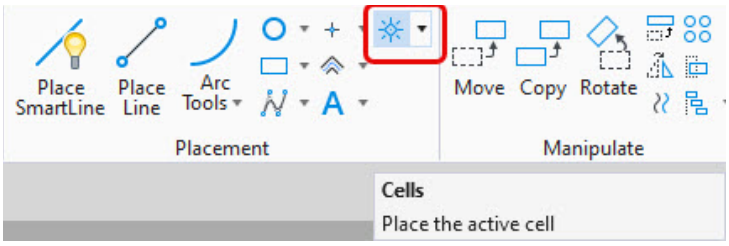
   b. Double-click on the “BEGIN MP...” text to edit the mile post information. For the Begin MP, enter 9.340 and 9.824 for the End MP.

   c. There are no Exceptions, Bridge Limits or Railroad Crossings for this project so these will be left as “None”.

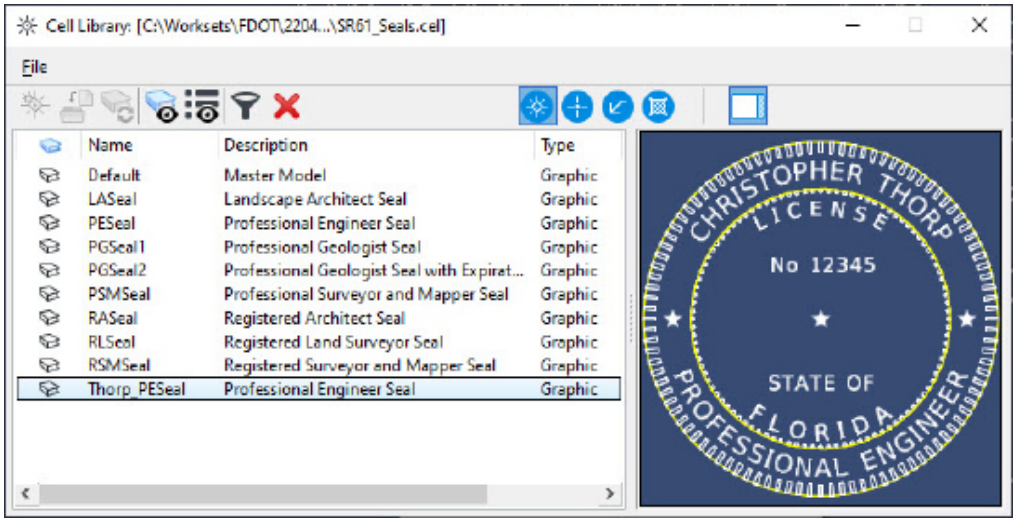
5. Use the **Edit Text** tool to edit the PROJECT DESCRIPTION, as shown below.



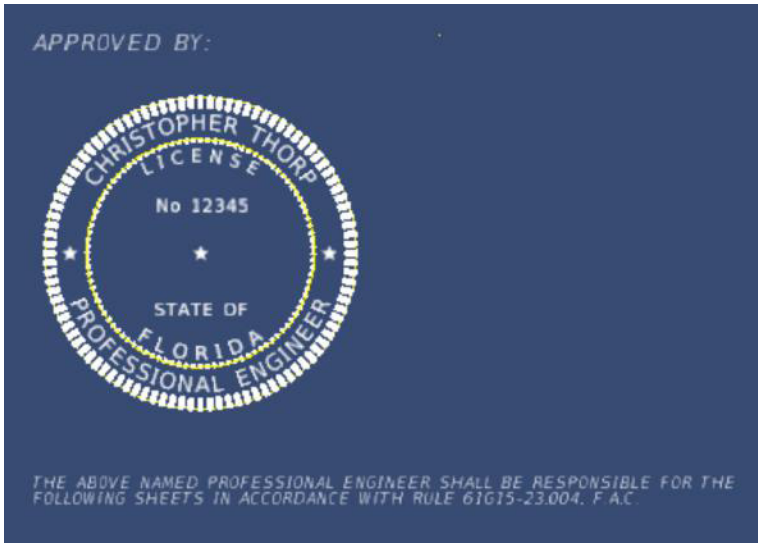
6. From the **Drawing** tab, launch the **Place Active Cell** tool.



7. Browse to the SR61_Seals library, within the Cells folder, that was created in the previous chapter. From the *Cell Library* dialog, highlight the newly created seal cell and double-click on the **YourName_PESeal.** This sets **YourName_PESeal** as the *Active Cell.*



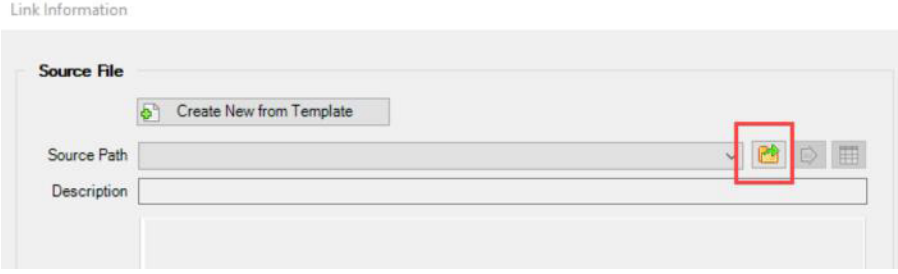
8. Make sure that the *Scale* for the cell is set to **1.0**. Place the cell under the "APPROVED BY:" text on the sheet. Data point to place the cell in the file. Reset when finished to close the **Place Active Cell** command.



9. From the **FDOT** tab select **Linked Data Manager.**

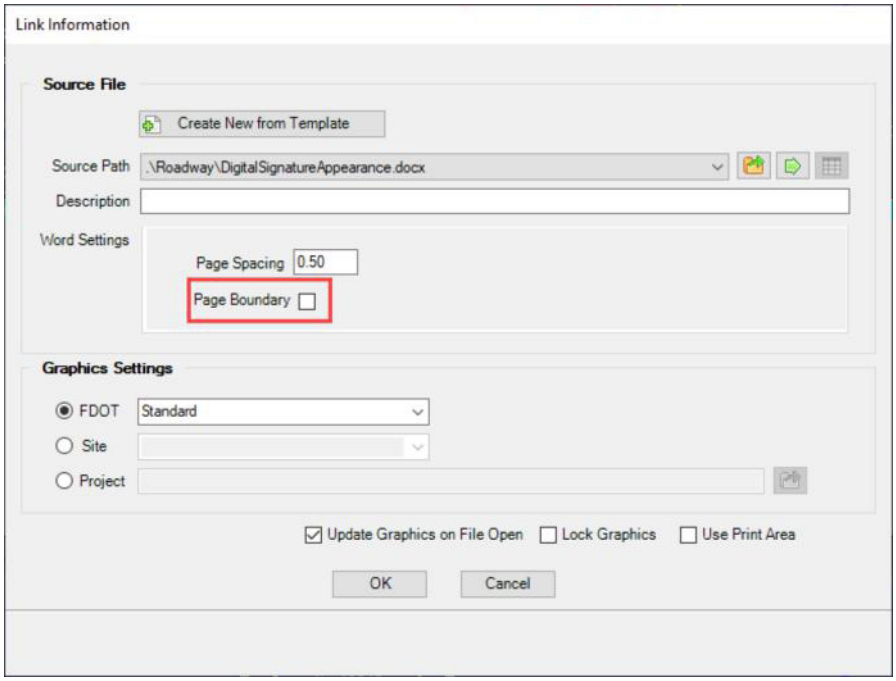
10. From the *FDOT Linked Data Manager* dialog, click the **Create New Link** button.

11. The *Link Information* dialog displays. Click the **Select Existing File** button.

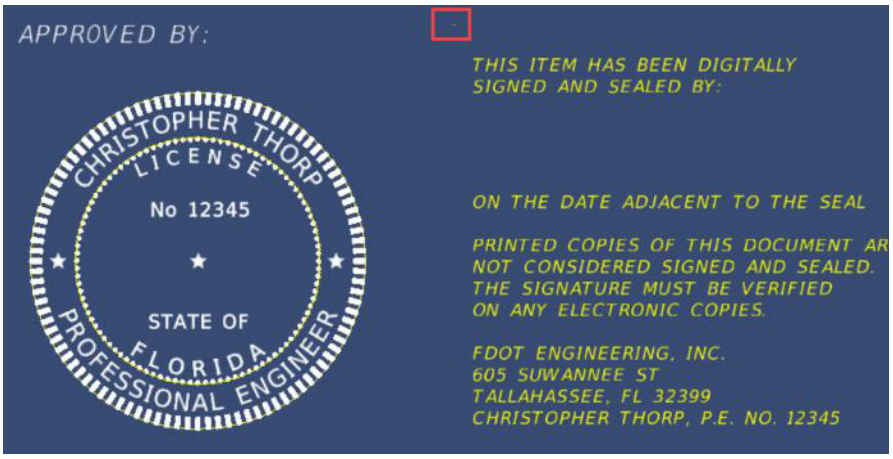


12. Select File displays. Switch the *File Type* to Word Files. Select the *DigitalSignatureAppearance.docx* and click the **Open** button.

13. From the *Link Information* dialog, toggle **Off** the *Page Boundary* check box and click **OK.**

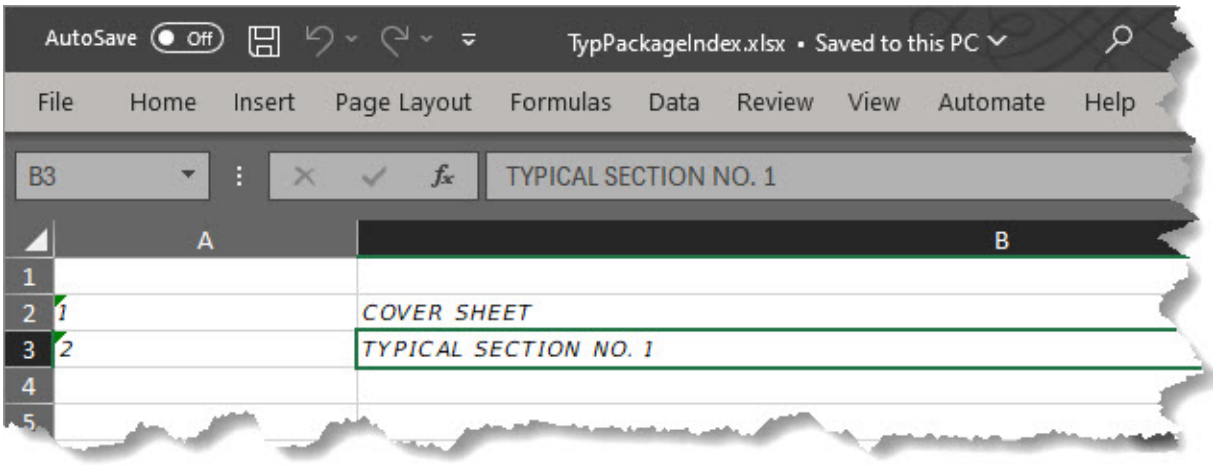


14. With the Digital Signature Appearance note attached to cursor, snap to the Point next to “APPROVED BY:” and data point to place the link. The link is created and listed in the *FDOT Linked Data Manager* dialog.



15. Open Windows Explorer and navigate to the C:\Worksets\FDOT\22049555201\Roadway folder. Copy the *ComponentIndex.xslx* file and paste it into the Roadway folder. Rename the file to *TypPackageIndex.xlsx.*

16. Open the *TypPackageIndex.xlsx* in Excel, edit as shown below, save and close the file.



17. From the *FDOT Linked Data Manager* dialog, click the **Create New Link** button.

18. Select File displays. Select the *TypPackageIndex.xlsx* and click the **Open** button.

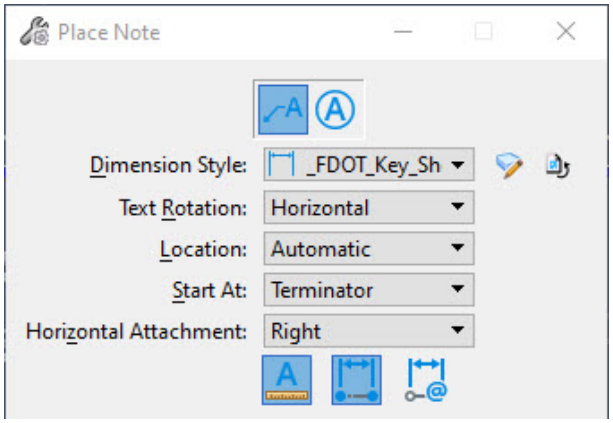
19. From the *FDOT Linked Data Manager* dialog, for the *Excel Settings*, set the *Worksheet* to **Sheet 1** and click **OK**.

20. Snap to the top left of the “SHEET NO” text and data point to place the Index.

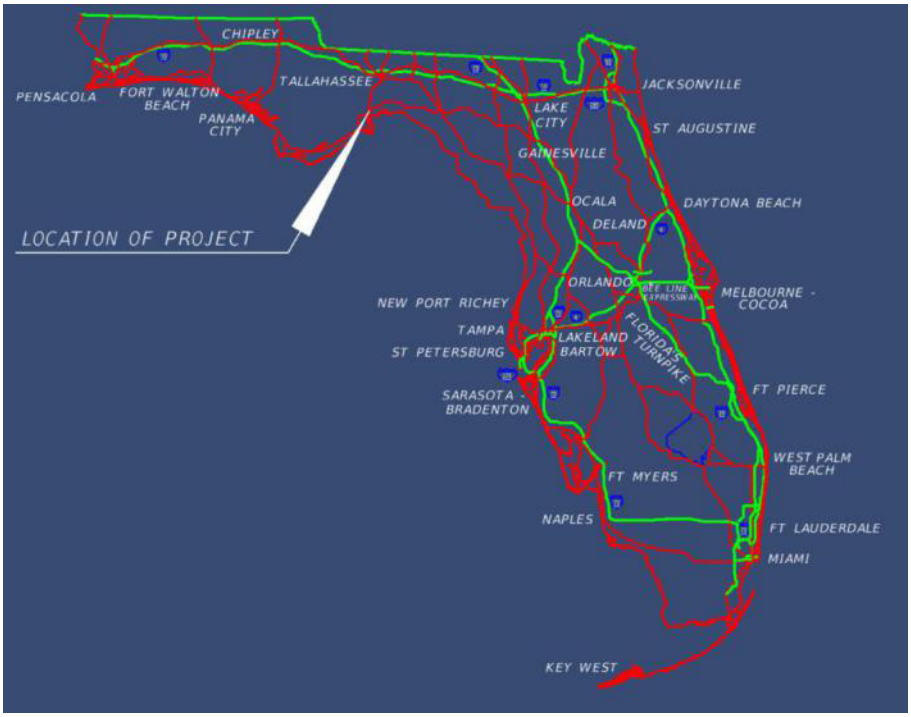
21. From the **Home** tab in the **Attributes** tool group, set the **Level** to **TextLabe**l.

22. From the **Drawing Production** Tab, select **Place Note**.

23. Set the *Place Note* Parameters as shown below, with the *Dimension Style* set to **_FDOT_Key_Sheet_Locate**.



24. In the Text Editor, set the *Text Style* to **FDOT (Small)** and then type LOCATION OF PROJECT. Select the general project location on the Florida map, position the label, and data point again to place it. The label should display as shown below.

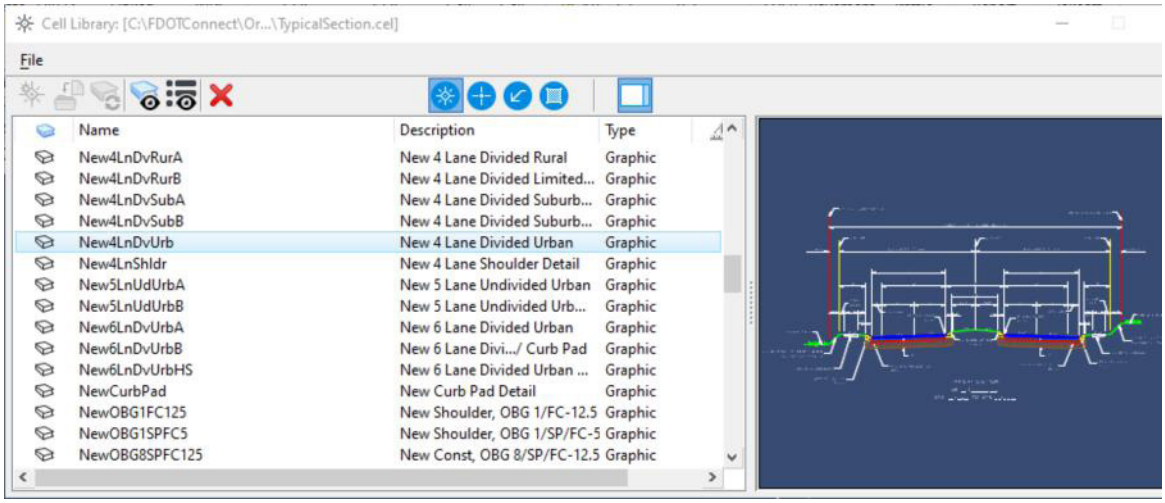


25. Navigate to the C:\Worksets\FDOT\22049555201\Roadway folder. Copy the *ComponentIndex.xslx* file and paste it into the Roadway folder with the name *TypPackageIndex.xlsx*

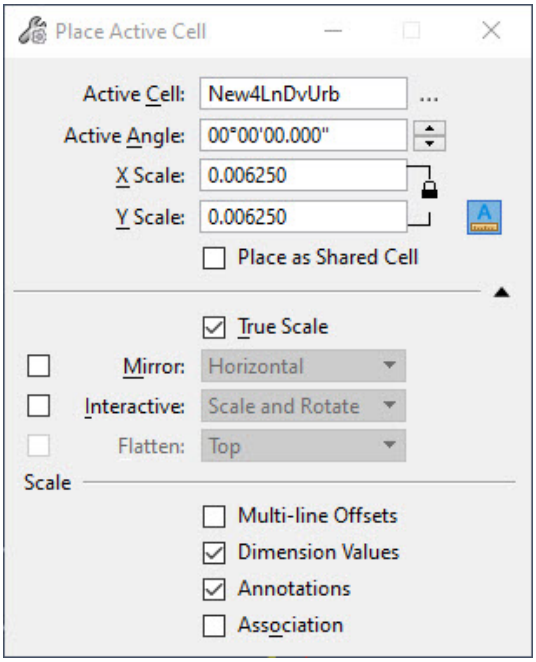
► *Typical Section Data Sheet:*

1. Staying in the TYPDRD01 file, switch to the TYPICAL PACKAGE SHEET model.

2. Right click and hold to bring up the Context Menu and select **Open Typical Section Cell Library.** On the *Cell Library* dialog find the **New4LnDvUrb** *cell* and double click. The MicroStation *Place Active Cell* command displays with **New4LnDvUrb** set as the *Active Cell.*



3. Set the *scale* of the cell to **0.006250.**



4. **Data point** to place the cell in the middle of the sheet. **Reset** when finished to get out of the *Place Cell* command.

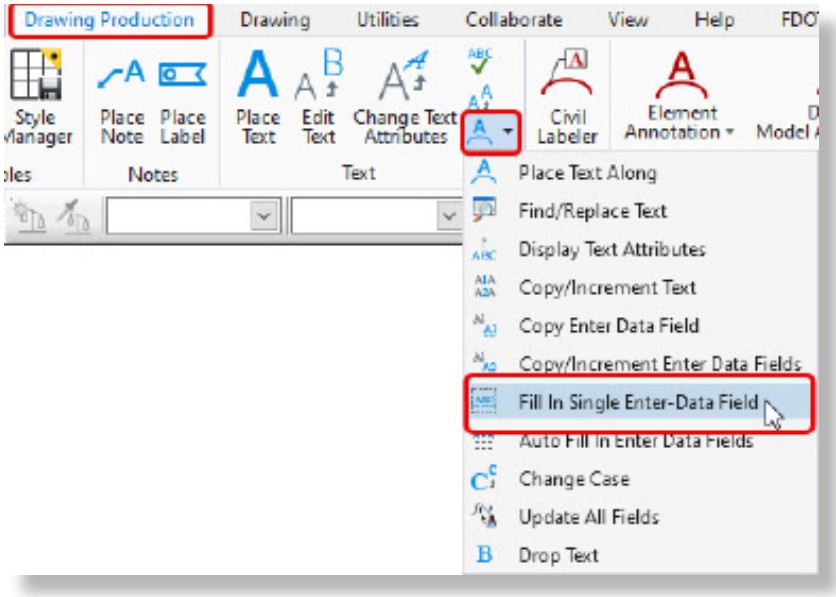
5. Double click on the Const**. ***** label and change it to display: Const. SR 61**.**

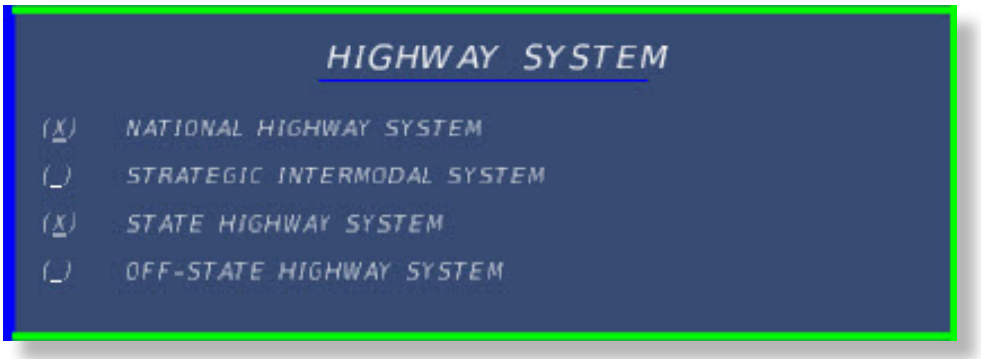
6. Edit the Road and Station information as shown below:

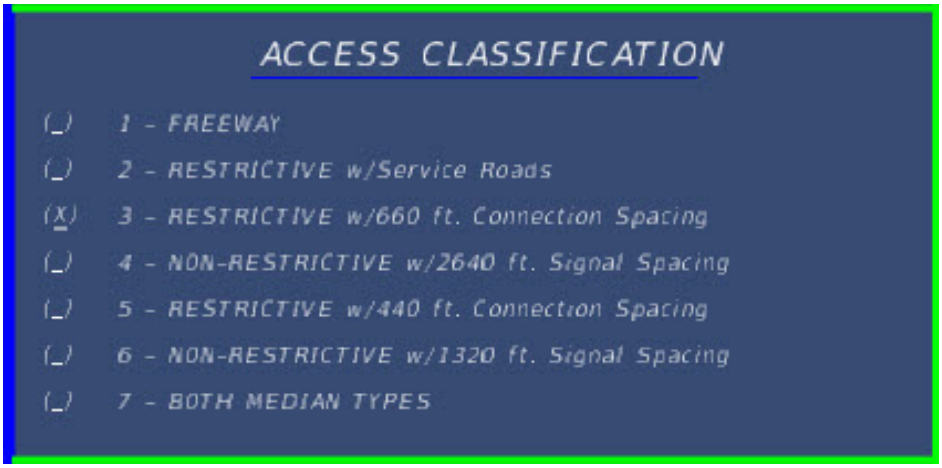
TYPICAL SECTION
SR 61 (US 319) (CRAWFORDVILLE HWY.)
STA 700+00.00 TO STA. 715+50.00

NOTE All the text on the form under the Project Controls section of the sheet are Enter Data Fields.

7. From the **Drawing Production** tab, select **Fill In Single Enter-Data Field** to edit the Data Fields in the sheet and fill out the information as in the image below.



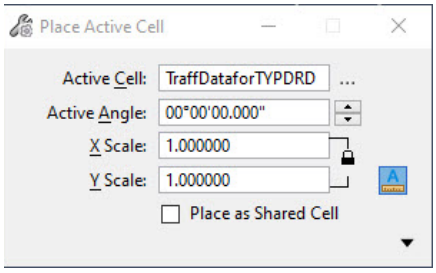




8. From the **FDOT** Tab, select the **Typical Sections** cell library from the **Cell Libraries** drop down button.

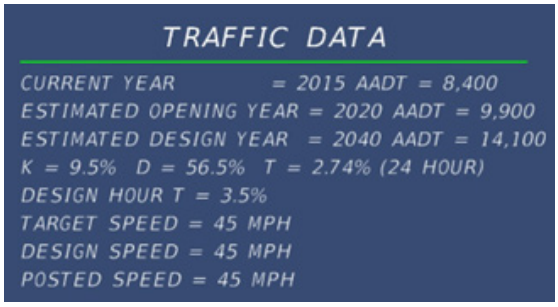
9. On the *Cell Library* dialog, double click on the cell **TraffDataforTYPDRD**. The *Place Active Cell* command displays with **TraffDataforTYPDRD** set as the *Active Cell*.

10. Set *scale* of the cell to **1.0**.



11. Data point to place the cell in the left bottom corner, below the typical section. Reset when finished to exit the *Place Cell* command.

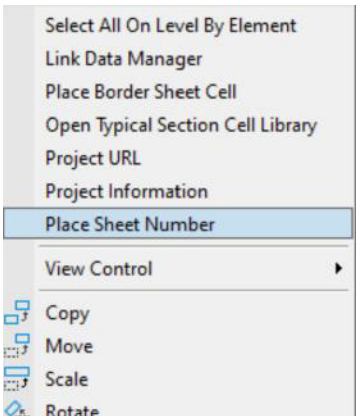
12. Double-click on the text to enter the correct Traffic Data information as shown below.



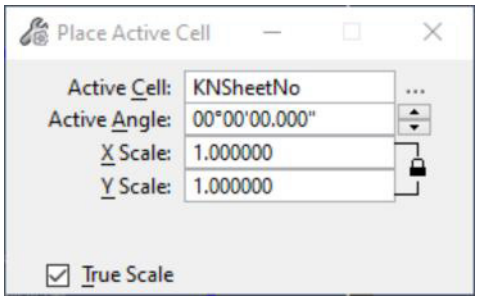
Exercise 3.3 *Edit Project Information with Plan Set Manager*

1. Switch back to the Typical Section Package Cover Sheet model.

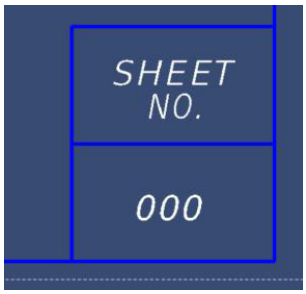
2. Right-click and hold to bring up the context menu. Select **Place Sheet Number** from the list.



3. The MicroStation *Place Active Cell* command launches with **KNSheetNo** set as the *Active Cell.*

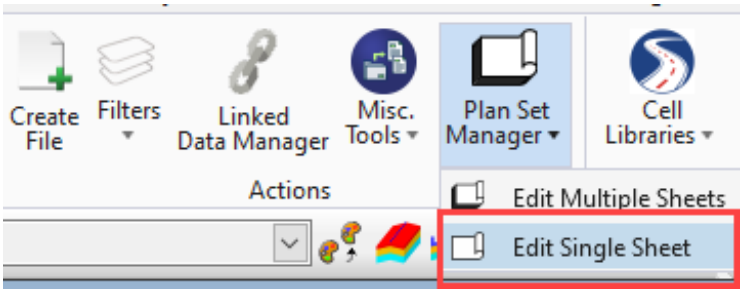


4. Place the cell in the center of the empty section below the SHEET NO. section Data point to the lower right corner of the Key Sheet border. The Sheet Number should display as shown below.

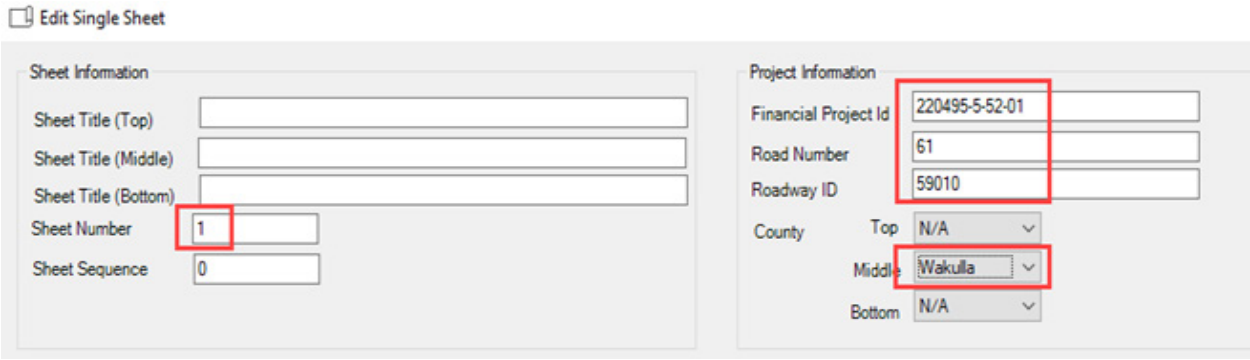


5. **Fit View** to center the border in the window.

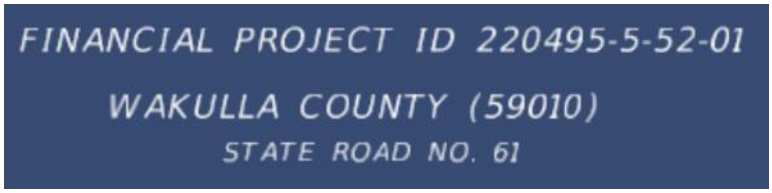
6. From the **FDOT** tab, select **Edit Single Sheet** from the **Plan Set Manager** drop-down button.

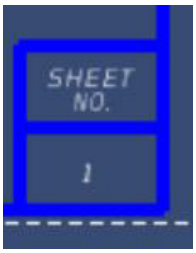


7. Fill out the *Sheet Information* and *Project Information* on the *Edit Single Sheet* dialog, as shown below.



8. Click **OK** to accept the changes and update the sheet border.





9. Switch back to the Typical Section Package Sheet and repeat steps 2-8 to fill out the border. The only fields needed to be filled out are the *Financial Project ID* and *Sheet Number*. For this model, the sheet number will be 2.

10. Once finished, **Fit View, Save Settings** and **Exit**.

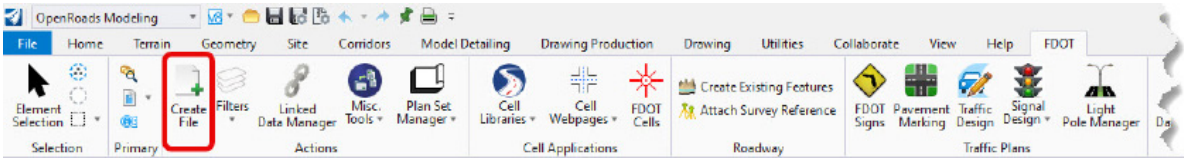
4 General Notes

Exercise 4.1 *Creating the General Notes Sheet*

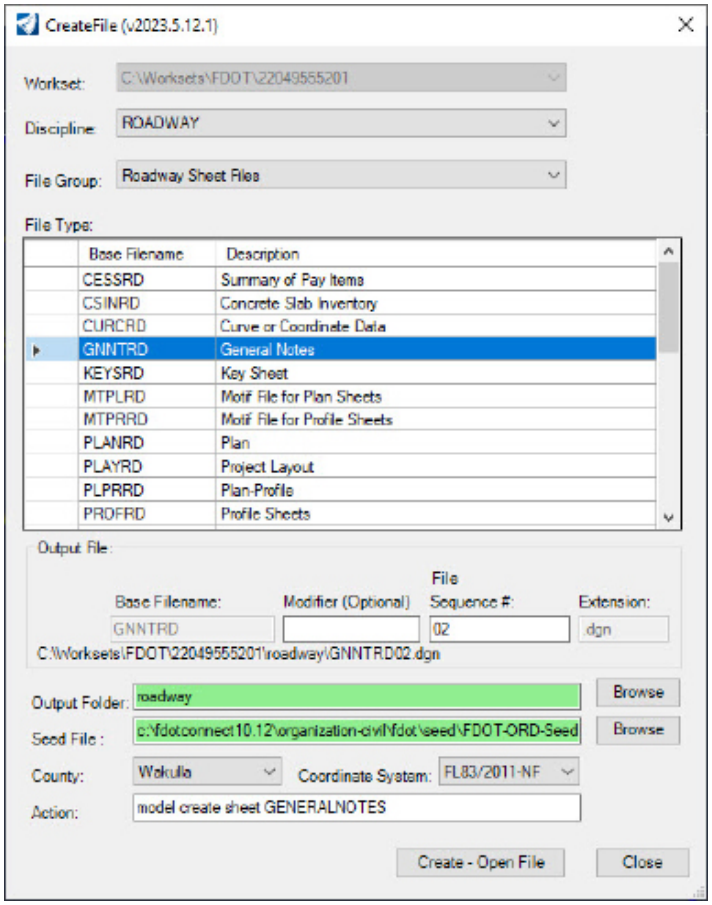
1. The General Notes sheet is required for each project. See ***Chapter 914.2.2*** in ***Part 9*** of the ***FDOT Design Manual (FDM)*** for a list of General Notes that are required.

2. Use the FDOTConnect for OpenRoads Designer icon to open: C:\Worksets FDOT\22049555201\ *BlankFile.dgn* file.

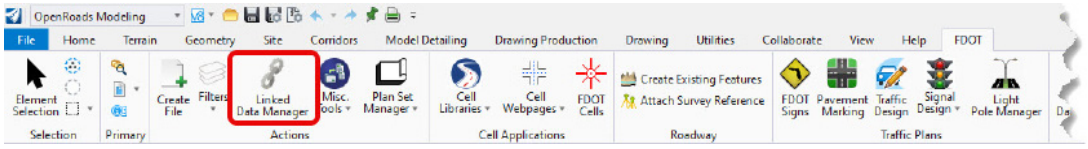
3. On the **OpenRoads Modeling** Workflow, select **Create File**, from the **FDOT** Tab.



4. The *Create File* dialog displays. On the *Create File* dialog set the *Discipline* to **Roadway** and *File Group* to **Roadway Sheet Files**. From the *File Type* list, select **GNNTRD**. On the *Output File* section of the dialog, be sure to set the *County* to **Wakulla**. Once everything is set up to match the image below, click **Create – Open File** to create and open the Project Notes file. Click **Close** to close the *Create File* dialog.

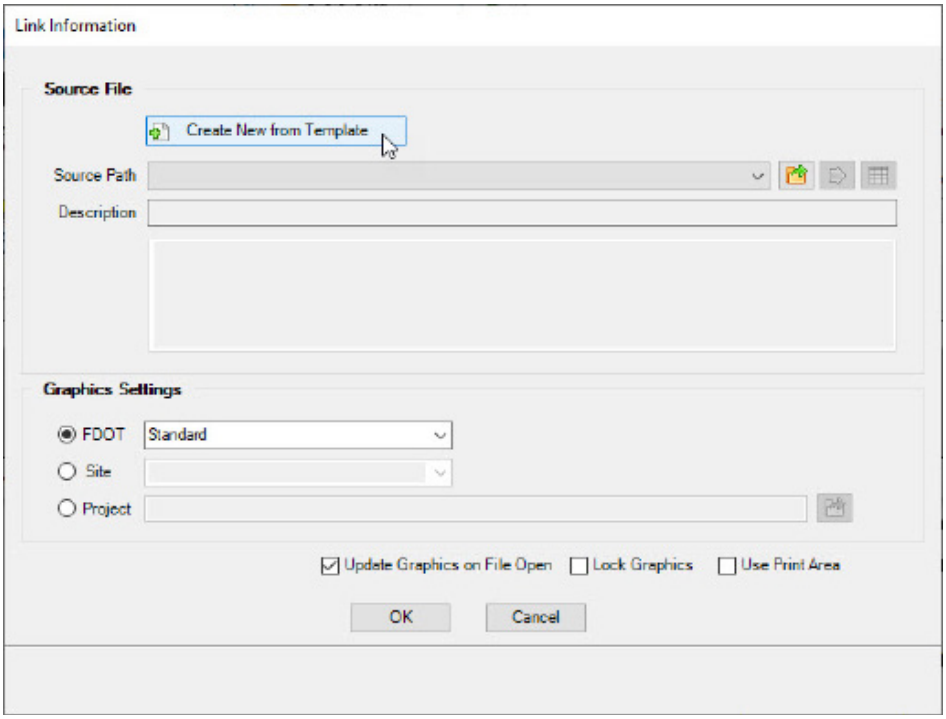


5. From the **FDOT** Tab, select **Linked Data Manager** from the **Actions** group.

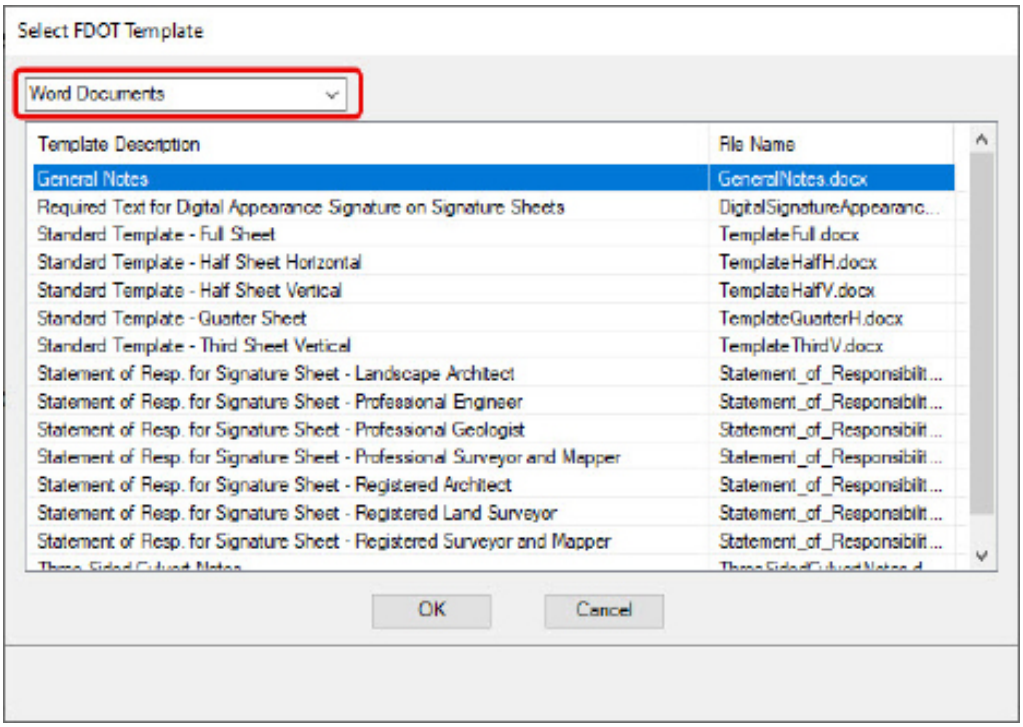


6. The *FDOT Linked Data Manager* dialog displays. Select the **Create New Link** icon.

7. The *Link Information* dialog displays. Click on the **Create New from Template** button.

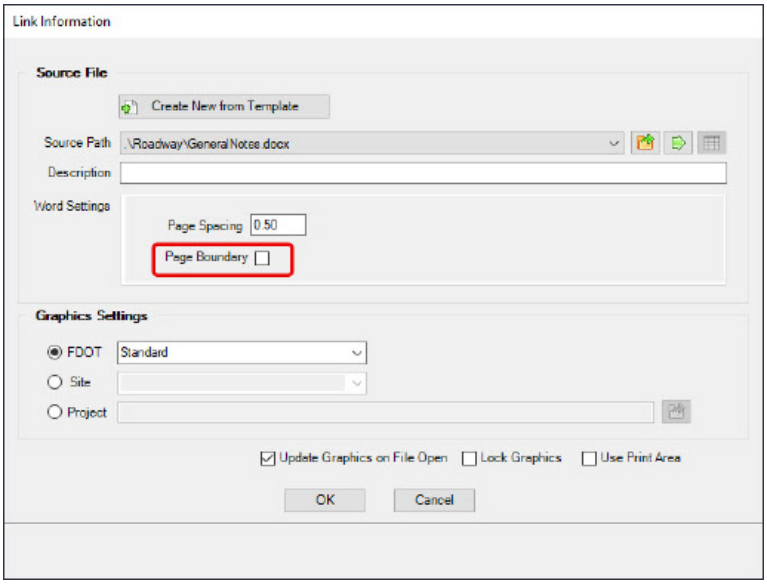


8. The *Select FDOT Template* dialog displays. Set the drop down to *Word Documents* and select the General Notes Template. Click **OK**.



9. From the *Save File* dialog browse to the C:\Worksets\FDOT\22049555201\Roadway folder, accept the default filename and **Save** the file.

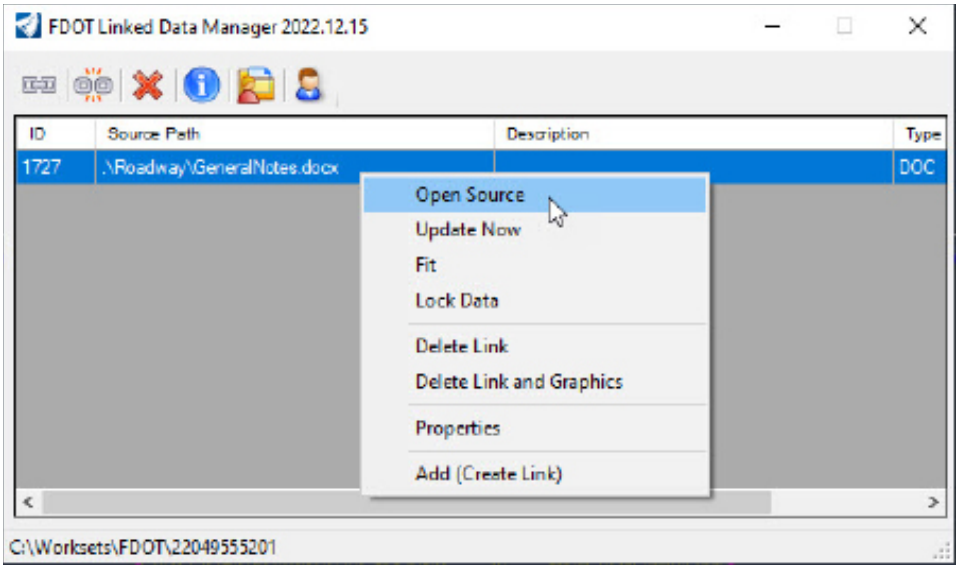
10. From the *Link Information* dialog confirm that the *Page Boundary* box is unchecked uncheck the Page Boundary box and then click **OK**.



11. With the General Notes attached to cursor snap to the upper left corner of the border and data point to place the link. The Link is created and listed in the *FDOT Linked Data Manager* dialog.

12. To edit the General Notes: Go to the *FDOT Linked Data Manager* dialog, right-click on the link and select **Open Source**.

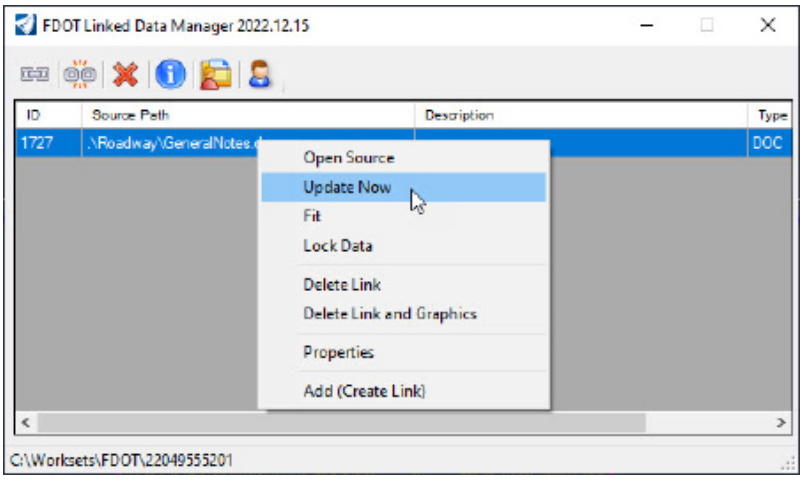
NOTE ***DO NOT edit the text for the General Notes in the MicroStation file. Always edit the word document or the MicroStation changes will be overwritten the next time the file updates from the source word document..***



a. The Text Document opens. Add the utility owners below, Save the file and close it.

UTILITY AGENCY/OWNERS:	CONTACT	TELEPHONE NUMBERS
TELEPHONE COMPANY A	OWNER A	(850) 222-2222
GAS COMPANY B	OWNER B	(850) 333-3333

12. From the *FDOT Linked Data Manager* dialog, select the link again, right-click and select **Update Now**. The *General Notes* will be updated in the MicroStation file to reflect the changes made.



13. From MicroStation **View Attributes** turn Off **Data Fields**, **Fit View** and then select **File > Save Settings**.

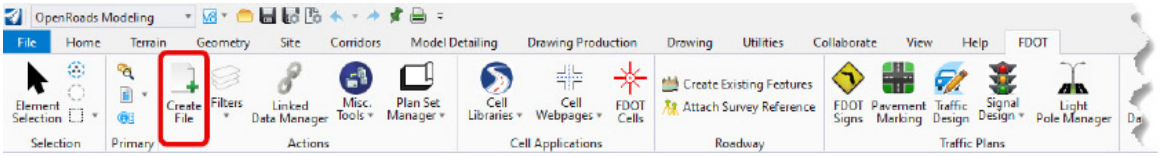
5 Plan Only Sheets

Part 9, ***Chapter 915*** of the ***FDOT Design Manual (FDM)*** outlines Florida Department of Transportation (FDOT) Roadway Plan and Roadway Plan-Profile Sheets. The Roadway plan sheets show the project's complete horizontal alignment. The plan-profile sheets show the project's complete horizontal and vertical alignment. Various Roadway elements such as pavement width, medians, paved shoulders, curbs, drainage elements, tapers, turn provisions, and intersecting roadways, are also shown on these sheets.

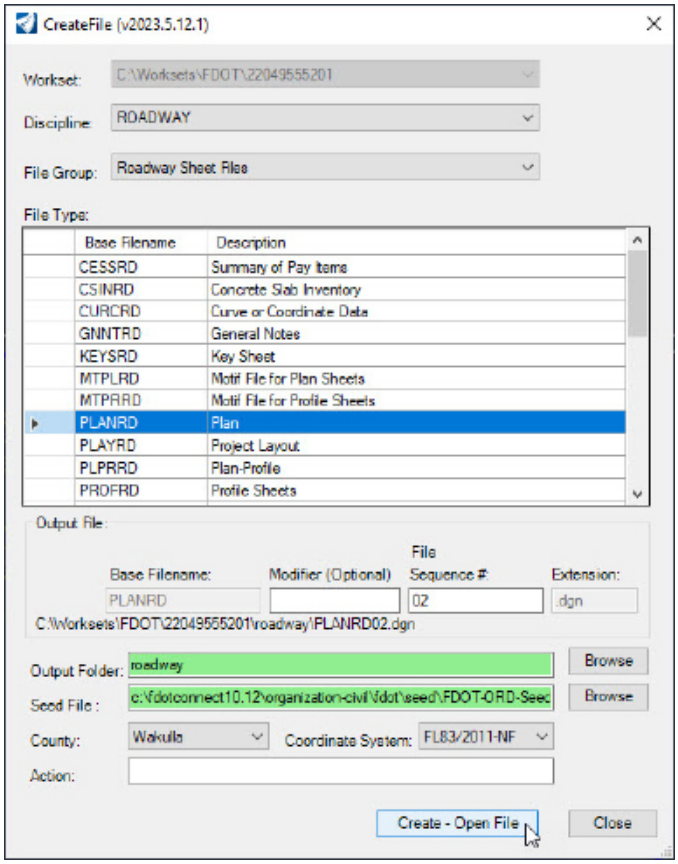
Exercise 5.1 *Create the Plan Sheets*

1. Use the FDOTConnect for OpenRoads Designer icon to launch ORD and open the C:\Worksets\FDOT\22049555201*_BlankFile.dgn* file.

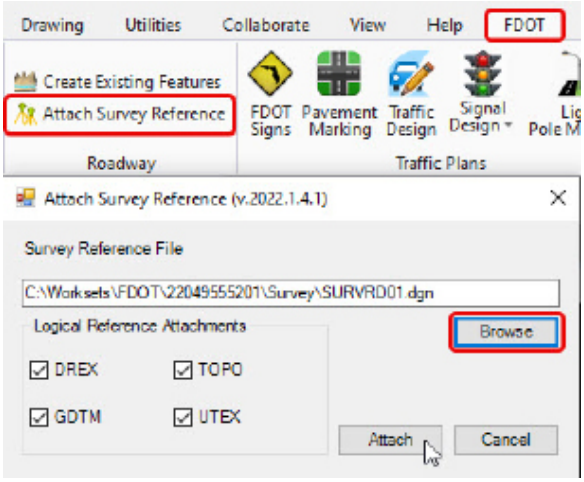
2. On the **OpenRoads Modeling** Workflow, select **Create File**, from the **FDOT** Tab.



3. The *Create File* dialog displays. On the *Create File* dialog set the *Discipline* to **Roadway** and *File Group* to **Roadway Sheet Files**. From the *File Type* list, select **PLANRD**. Set the *County* to **Wakulla**. Once everything is set up to match the image below, click **Create – Open File** to create and open the Plan file. Click **Close** to close the *Create File* dialog.



4. Navigate to **FDOT > Roadway > Attach Survey Reference**.



Browse to the *SURVRD01.dgn* file located within the project directory will be referenced 4 times with different logical names and filters set for each type of file.

- *SURVRD01.dgn, logical TOPO* (Existing Roadway)
- *SURVRD01.dgn, logical GDTM* (Existing Terrain)
- *SURVRD01.dgn, logical DREX* (Existing Drainage)
- *SURVRD01.dgn, logical UTEX* (Existing Utilities)

5. **Reference** in the additional design files:
   - C:\Worksets\FDOT\22049555201\Roadway*ALGNRD01.dgn*
   - C:\Worksets\FDOT\22049555201\Roadway*DSGNRD01.dgn*

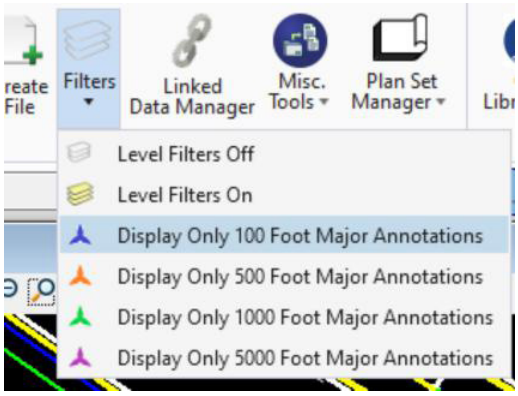
6. Use the **Level Display** to turn OFF any levels that are not needed for the Plan Sheets.

7. From the **Drawing Production** tab, select the **Annotate Element** tool

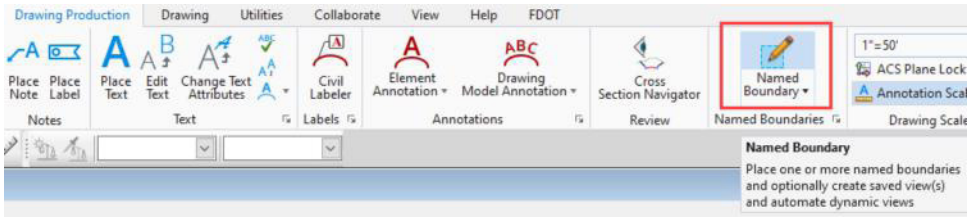
   a. **Drawing Production > Annotations > Element Annotation > Annotate Element**

   b. Select the Alignment to annotate and then reset to complete

   c. From the **FDOT** tab, select the **Display Only 100 Foot Major Annotations** action from the **Filters** drop-down button



8. From the **Drawing Production** tab, select the **Place Named Boundary** tool.



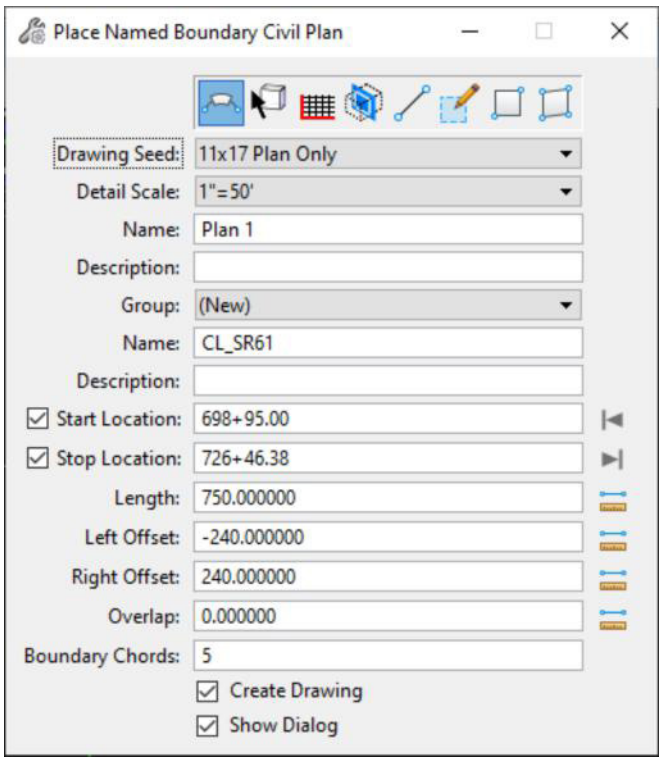
9. Select **Drawing Production > Named Boundaries > Named Boundary > Place Named Boundary**.

   a. Select the **Civil Plan** mode.

   b. Set *Drawing Seed* to **11x17 Plan Only**.

   c. In the 2D view, select the CL_SR61 alignment along which the plan named boundaries will be created.

   d. Fill out the dialog, as shown.



   e. Follow the prompts in the lower left corner left click to define the named boundaries. Multiple left clicks may be required.

NOTE ***Two or three clicks are required to (1) accept the Start Location, (2) accept the Stop Location, and (3) create the Named Boundaries. However, if the Start or Stop Location are selected graphically one or more of these clicks has already been completed.***

10. On the *Create Drawing* dialog, click **OK** to create the sheets.

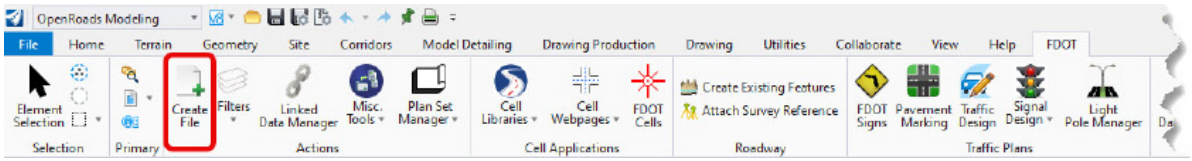
6 Plan – Profile Sheets

PLAN - PROFILE

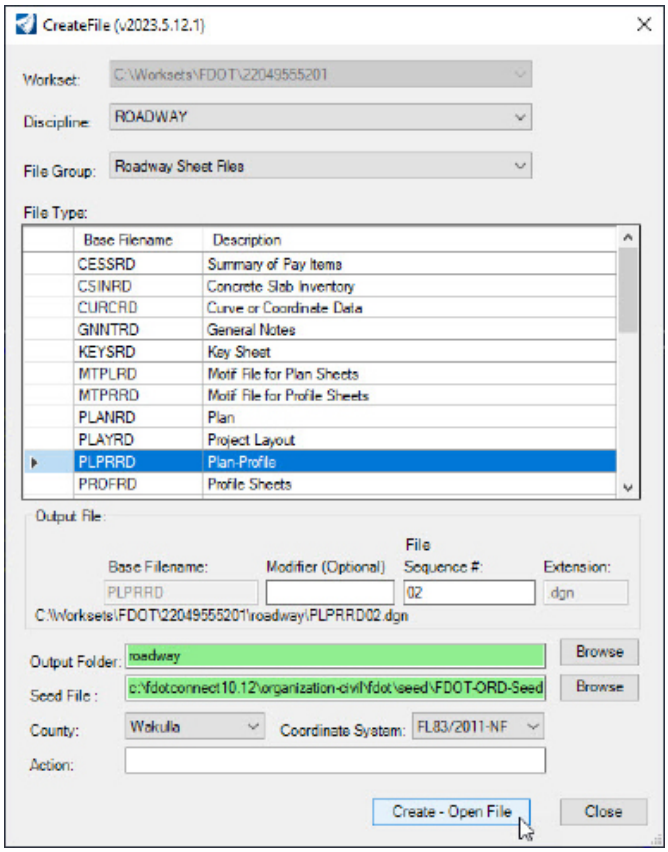
Exercise 6.1 *Create the Plan - Profile Sheets*

1. Use the FDOTConnect for OpenRoads Designer icon to launch ORD and open the C:\Worksets\FDOT\22049555201*_BlankFile.dgn* file.

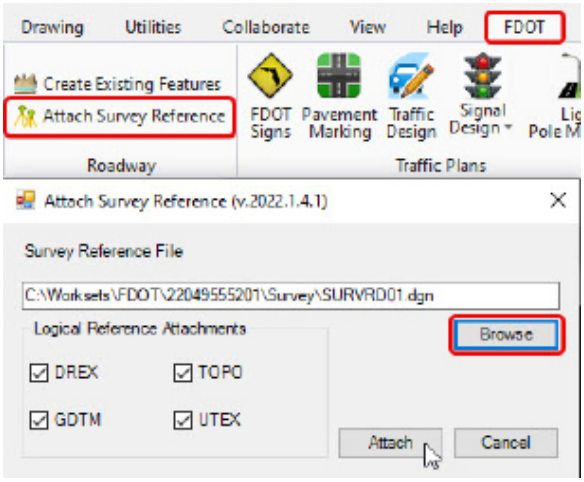
2. On the OpenRoads Modeling Workflow, select **Create File**, from the **FDOT** Tab.



3. The *Create File* dialog displays. On the *Create File* dialog set the *Discipline* to **Roadway** and *File Group* to **Roadway Sheet Files**. From the *File Type* list, select **PLPRRD**. On the Output File section of the dialog, be sure to set the *County* to **Wakulla**. Once everything is set up to match the image below, click **Create – Open File** to create and open the Plan-Profile file. Click **Close** to close the *Create File* dialog.



4. Navigate to **FDOT > Roadway > Attach Survey Reference**.

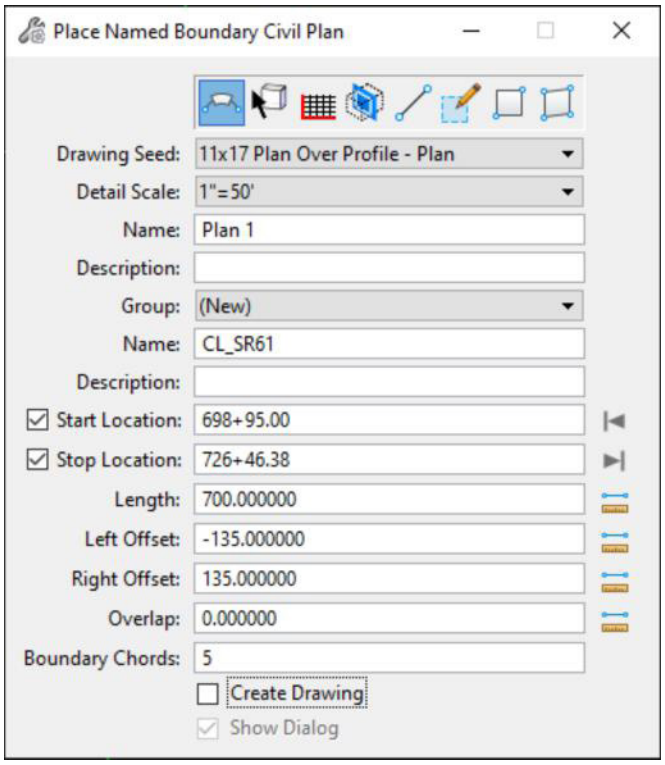


The *SURVRD01.dgn* file located within the project directory will be referenced 4 times with different logical names and filters set for each type of file.

- *SURVRD01.dgn, logical TOPO* (Existing Roadway)
- *SURVRD01.dgn, logical GDTM* (Existing Terrain)
- *SURVRD01.dgn, logical DREX* (Existing Drainage)
- *SURVRD01.dgn, logical UTEX* (Existing Utilities)

5. **Reference** in the additional design files:
   - C:\Worksets\FDOT\22049555201\Roadway*ALGNRD01.dgn*
   - C:\Worksets\FDOT\22049555201\Roadway*DSGNRD01.dgn*
6. Use the **Level Display** to turn OFF any levels that are not needed for the Plan Sheets.
7. From the **Drawing Production** tab, select the **Annotate Element** tool
   a. **Drawing Production > Annotations > Element Annotation > Annotate Element**
   b. Select the Alignment to annotate and then reset to complete
   c. From the **FDOT** tab, select the **Display Only 100 Foot Major Annotations** action from the **Filters** drop-down button

8. Create Named Boundaries for the Plan portion of the sheets.



a. Select **Drawing Production > Named Boundaries > Named Boundary > Place Named Boundary.**

b. Select the mode **Civil Plan**.

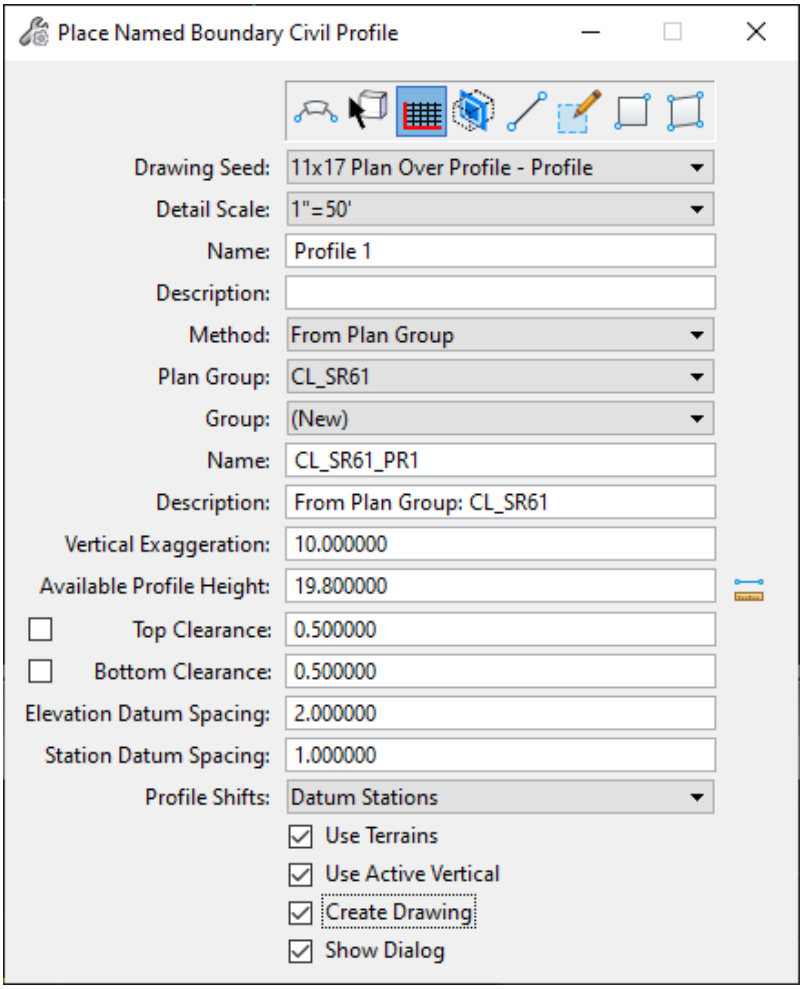
c. Set *Drawing Seed* to **11x17 Plan Over Profile – Plan**.

d. In the 2D view, select the CL_SR61 alignment along which the plan named boundaries will be created.

e. Fill out the dialog, as shown above, making sure that *Create Drawing* is NOT checked.

f. Follow the prompts in the lower left corner left click to define the named boundaries. Multiple left clicks may be required. A total of two clicks are required to (1) accept the Start Location, (2) accept the Stop Location, and (3) create the Named Boundaries. However, if the Start or Stop Location are selected graphically one or more of these clicks has already been completed.

9. Create Named Boundaries for the profile portion of the sheets.



a. Open a profile view for the CL_SR61 alignment. This can be done using the right click *View Control* context menus.

b. Select **Drawing Production > Named Boundaries > Named Boundary > Place Named Boundary.**

c. Select the **Civil Profile** mode.

d. Set *Drawing Seed* to **11x17 Plan Over Profile – Profile**.

e. In the profile view, select the profile along which the named boundaries will be created.

f. Fill out the dialog, as shown, this time making sure that *Create Drawing* is enabled.

g. Follow the prompts in the lower left corner left click to define the named boundaries. Multiple left clicks may be required.

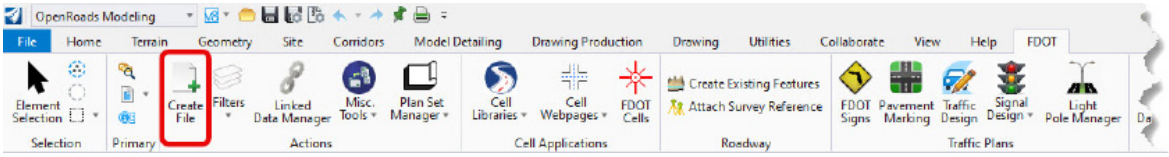
h. On the *Create Drawing* dialog, click **OK** to create the sheets.

7 Profile Only Sheets

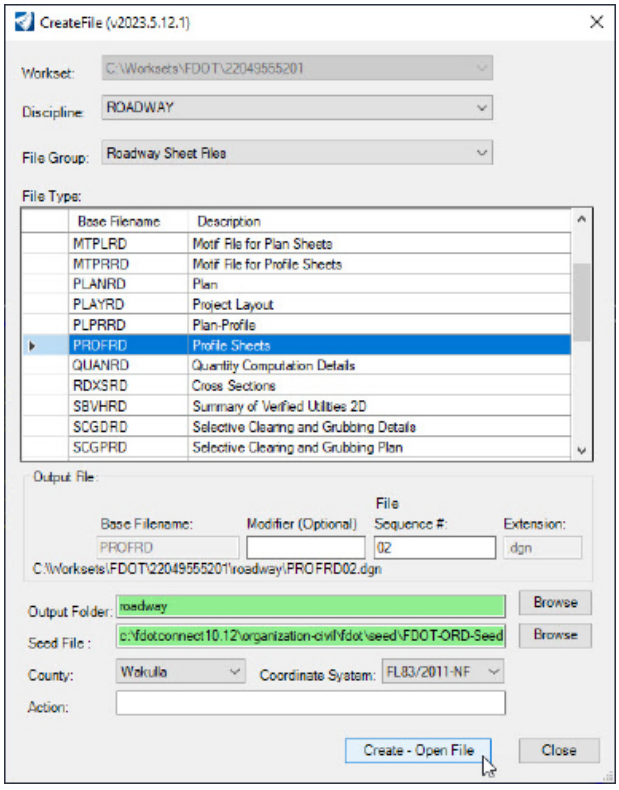
Exercise 7.1 *Create the Profile Sheets*

1. Use the FDOTConnect for OpenRoads Designer icon to launch ORD and open the C:\Worksets\FDOT\22049555201*_BlankFile.dgn* file.

2. On the OpenRoads Modeling Workflow, select **Create File**, from the **FDOT** Tab.



3. The *Create File* dialog displays. On the *Create File* dialog set the *Discipline* to **Roadway** and *File Group* to **Roadway Sheet Files**. From the *File Type* list, select **PROFRD**. On the *Output File* section of the dialog, be sure to set the *County* to **Wakulla**. Once everything is set up to match the image below, click **Create – Open File** to create and open the Plan-Profile file. Click **Close** to close the *Create File* dialog.



4. **Reference** in the following design files:

   - C:\Worksets\FDOT\22049555201\Roadway*ALGNRD01.dgn*
   - C:\Worksets\FDOT\22049555201\Roadway*DSGNRD01.dgn*
   - C:\Worksets\FDOT\22049555201\Survey*SURVRD01.dgn*

5. Use the **Level Display** to turn OFF levels and clean up the view or do a right click and hold to select the **Level Off** command.

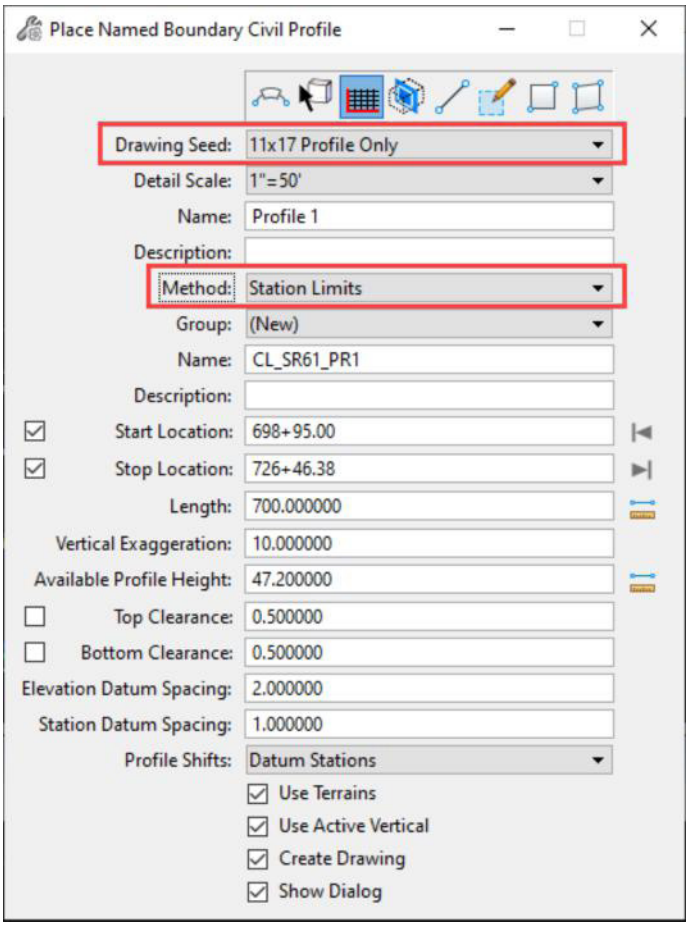
6. Open a profile view for the CL_SR61 alignment. This can be done using the right click *View Control* context menus. **View Control > 2 Views Plan/Profile**.

7. Select **Drawing Production > Named Boundaries > Named Boundary > Place Named Boundary.**

8. Select the **Civil Profile** mode.

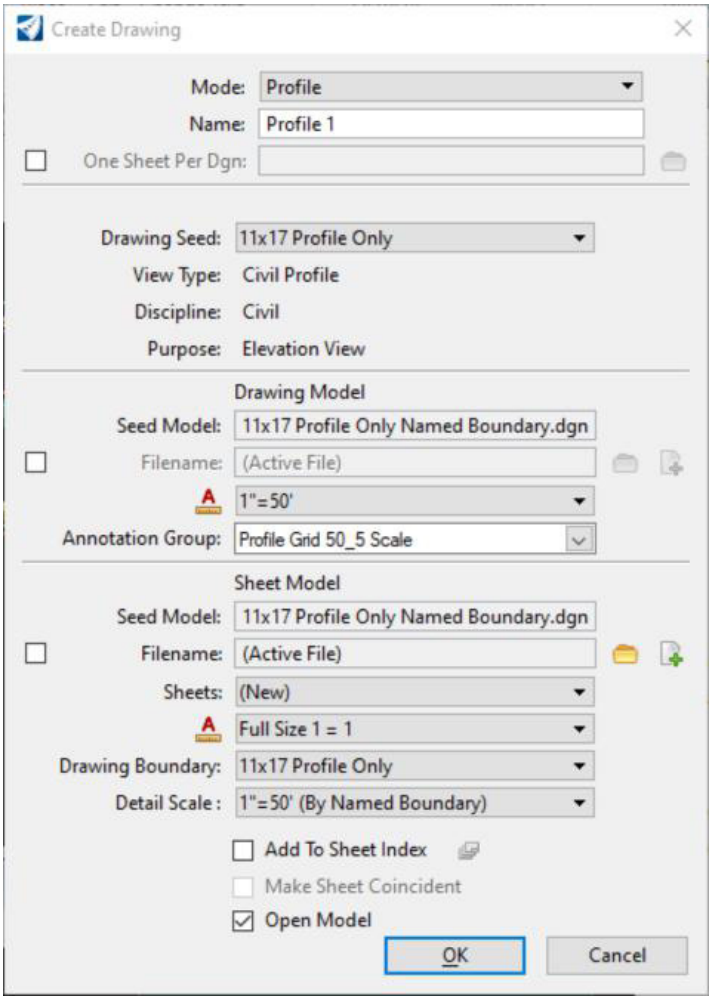
9. In the Profile view, select the CL_SR61 alignment along which the plan named boundaries will be created.

10. Fill out the dialog being sure to set the *Drawing Seed* and *Method*, as shown below.



11. Follow the prompts in the lower left corner left click to define the named boundaries. Multiple left clicks may be required.

12. On the *Create Drawing* dialog, click **OK** to create the sheets.



8 Cross Section Sheets

OVERVIEW

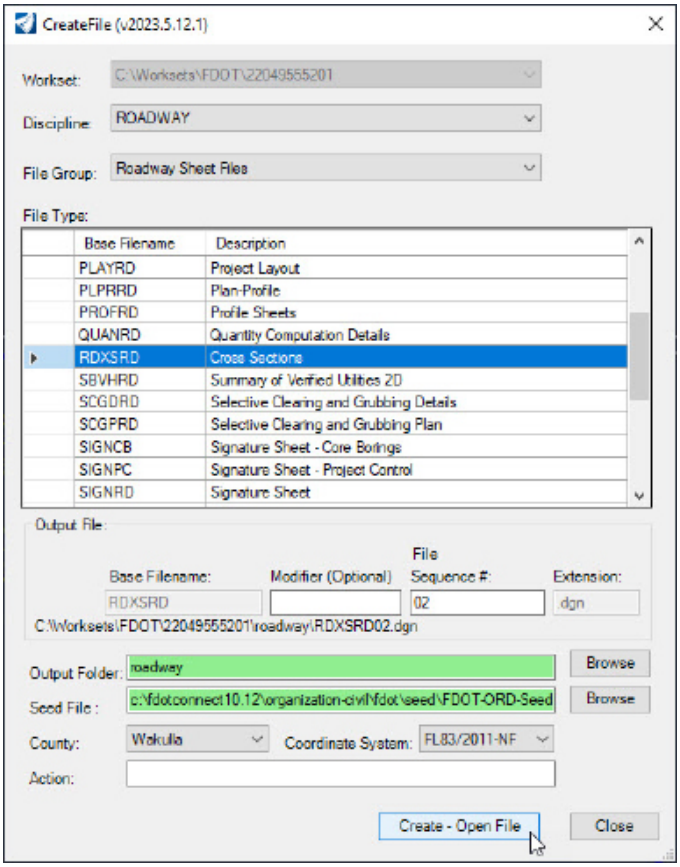
Part 9, Chapter 905 of the ***FDM*** outlines FDOT Roadway Cross Sections Sheets. Cross Sections depict the existing ground, including all man-made features, and proposed roadway template as sections perpendicular to the respective stations along a survey baseline or construction centerline. Cross section sheets are used to provide supplemental information during the plans phase review process. These sheets may also be used for coordination purposes (e.g., permit or utility, local agency, public meetings). These sheets are not to be placed within the Contract Plans Set. Signing and sealing these sheets is not required

Exercise 8.1 *Create Cross Section Sheets*

1. Use the **FDOTConnect for OpenRoads Designer** icon to launch ORD and open the C:\Worksets\FDOT\22049555201*_BlankFile.dgn* file.

2. On the OpenRoads Modeling Workflow, select **Create File**, from the **FDOT** Tab.

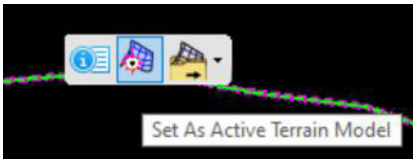
3. The *Create File* dialog displays. On the *Create File* dialog set the *Discipline* to **Roadway** and *File Group* to **Roadway Sheet Files.** From the *File Type* list, select **RDXSRD**. On the *Output File* section of the dialog, be sure to set the *County* to **Wakulla**. Once everything is set up to match the image below, click **Create – Open File** to create and open the Cross Sections file. Click **Close** to close the *Create File* dialog.



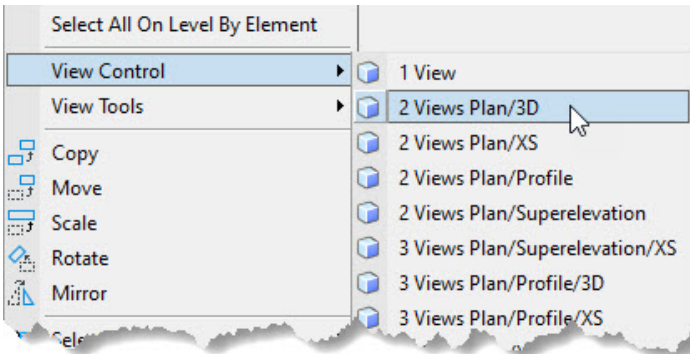
4. **Reference** in the following design files:

   - C:\Worksets\FDOT\22049555201\Roadway*ALGNRD01.dgn*
   - C:\Worksets\FDOT\22049555201\Roadway*MODLRDDetail61.dgn*
   - C:\Worksets\FDOT\22049555201\Roadway*MODLRD_Existing_Drainage01.dgn*
   - C:\Worksets\FDOT\22049555201\Roadway*MODLRD_Existing_Features01.dgn*
   - C:\Worksets\FDOT\22049555201\Roadway*MODLRD_Existing_Utilities01.dgn*
   - C:\Worksets\FDOT\22049555201\Roadway*MODLRDMainLine61.dgn*
   - C:\Worksets\FDOT\22049555201\Roadway*MODLRDUS98.dgn*
   - C:\Worksets\FDOT\22049555201\Roadway*RWDTRD01.dgn*
   - C:\Worksets\FDOT\22049555201Survey*GDTMRD01.dgn*

5. Set the Existing Ground Terrain Model to active by selecting and hovering over the boundary of the Terrain Model to open the contextual menu. Select **Set as Active Terrain Model.**



6. Open a 3D view by selecting **2 Views Plan/3D** from the right-click context menu or pressing F2.



IMPORTANT ***Both the 2D and the 3D models must be open in a view to create cross sections.***

7. Create Named Boundaries which define the location and extent of each cross section.

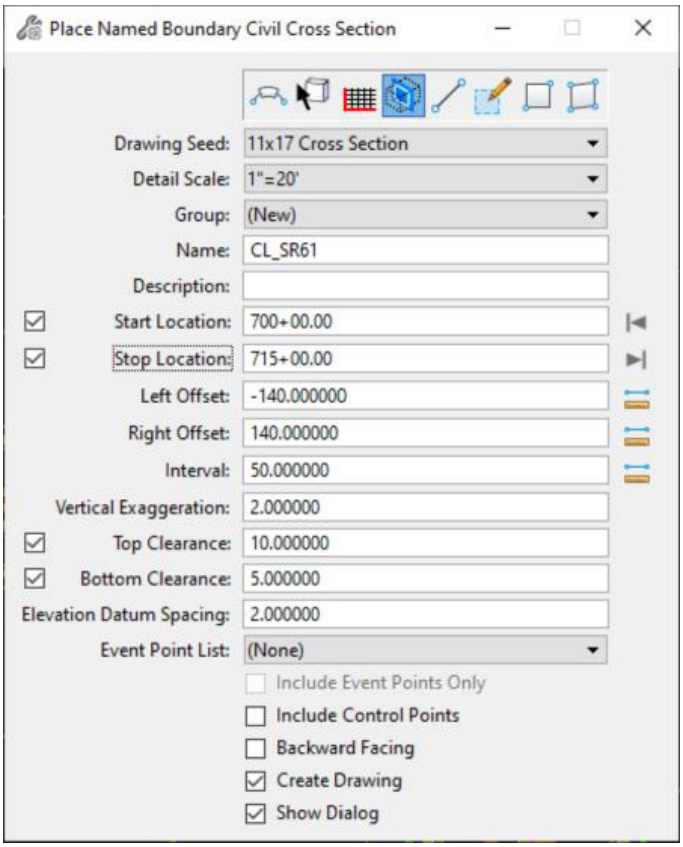
   a. Select **Drawing Production > Named Boundaries > Named Boundary > Place Named Boundary.**

   b. Select the **Civil Cross Section** mode.

   c. Set *Drawing Seed* to **11x17 Cross Section**.

   d. In the 2D view, select the CL_SR61 alignment along which the cross section named boundaries will be created.

e. Set the *Start Location* to **700+00** and the *Stop Location* to **715+00.** the dialog should be filled out as shown below. The settings from the *Left Offset* down are set based on the applied *Drawing Seed*.



f. Follow the prompts in the lower left corner left click to define the named boundaries. Multiple left clicks may be required. Once the named boundaries are created, they appear in the 3D view.

g. Click **OK** on the *Create Drawing* dialog to create the sheets.

9 Plan Set Manager

In FDOTConnect the plan sheet annotations have been set up to populate using the Plan Set Manager (PSM) tool. In this chapter we will review this tool's Multi Sheet mode, as Single Sheet edit has been covered in the Key Sheet and Typical Sections chapters. This chapter will also show how to create a PSET with PSM.

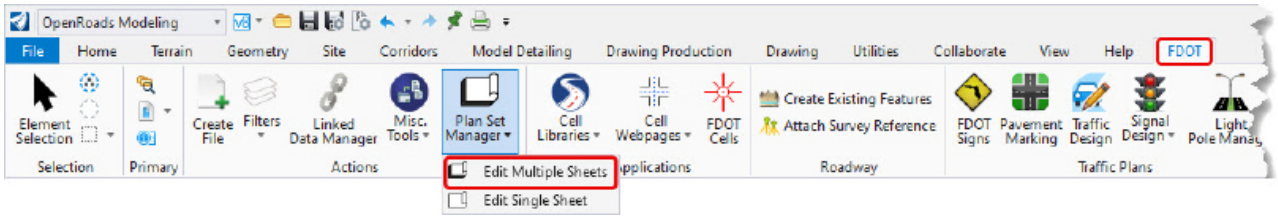
OBJECTIVES

- Annotate Sheet Border Title Block using Multi Sheet mode
- Edit Sheet Numbers
- Create a PSet
- Plot Plan Sheets to PDF

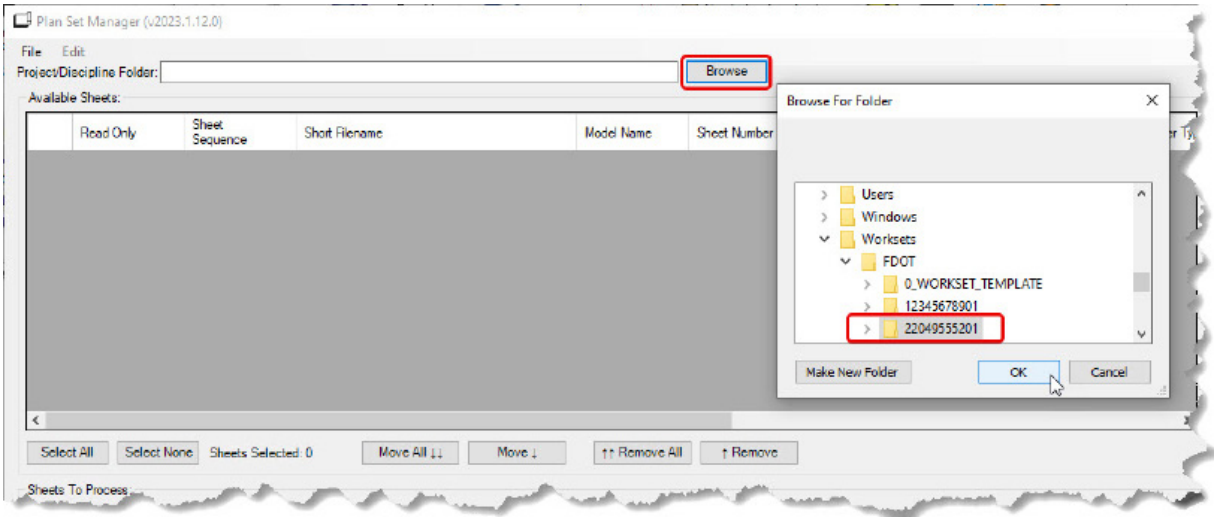
Exercise 9.1 *Annotating Title Block Information with Plan Set Manager*

1. Use the FDOTConnect for OpenRoads Designer icon to launch ORD and open the C:\Worksets\FDOT\22049555201\Roadway*PLANRD01.dgn*

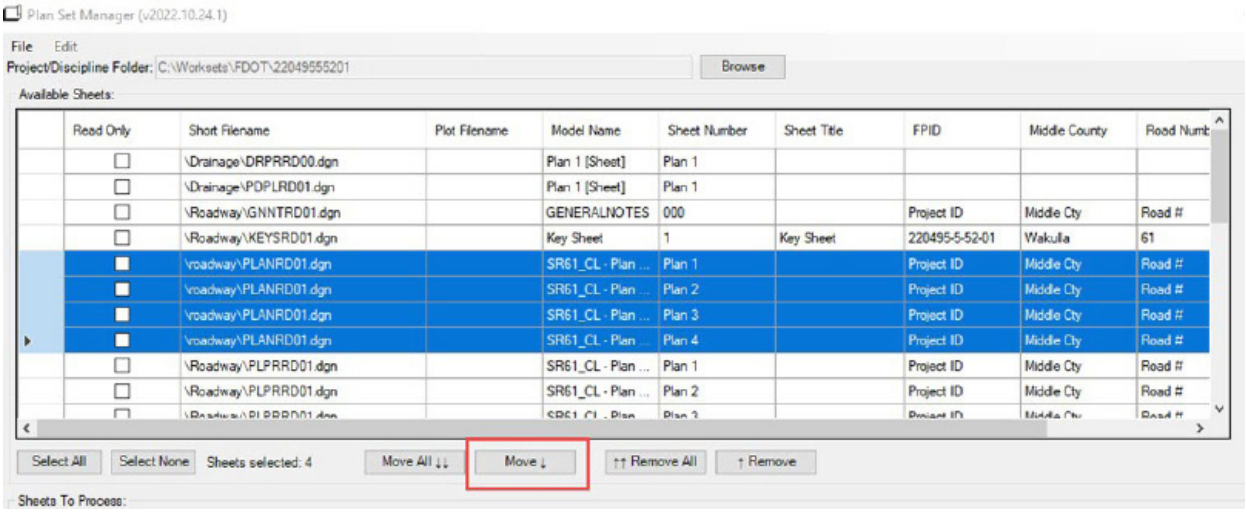
2. From the **FDOT** tab, select **Edit Multiple Sheets** from the **Plan Set Manager** drop-down button.



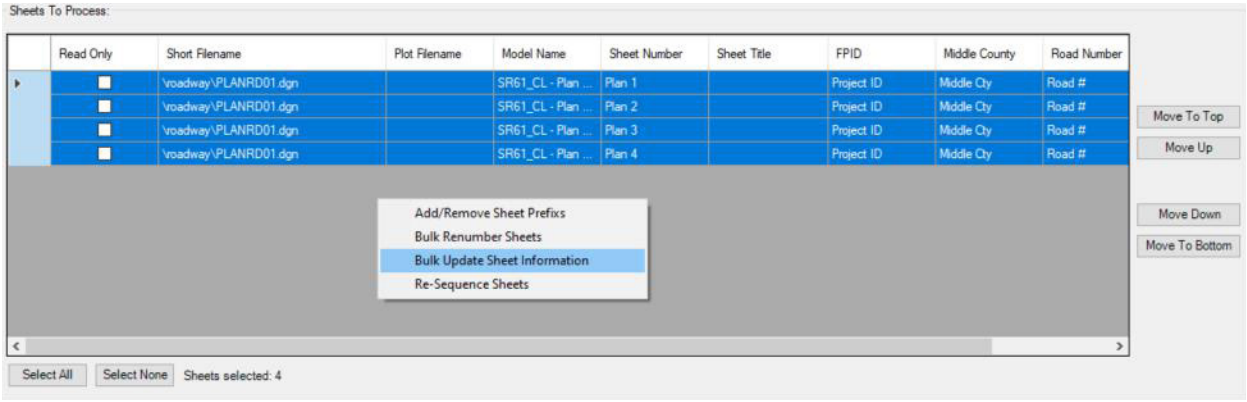
3. On the *Plan Set Manager* dialog, click on the **Browse** button and browse to the C:\Worksets\FDOT\22049555201 folder. Select the Workset folder and click **OK**.



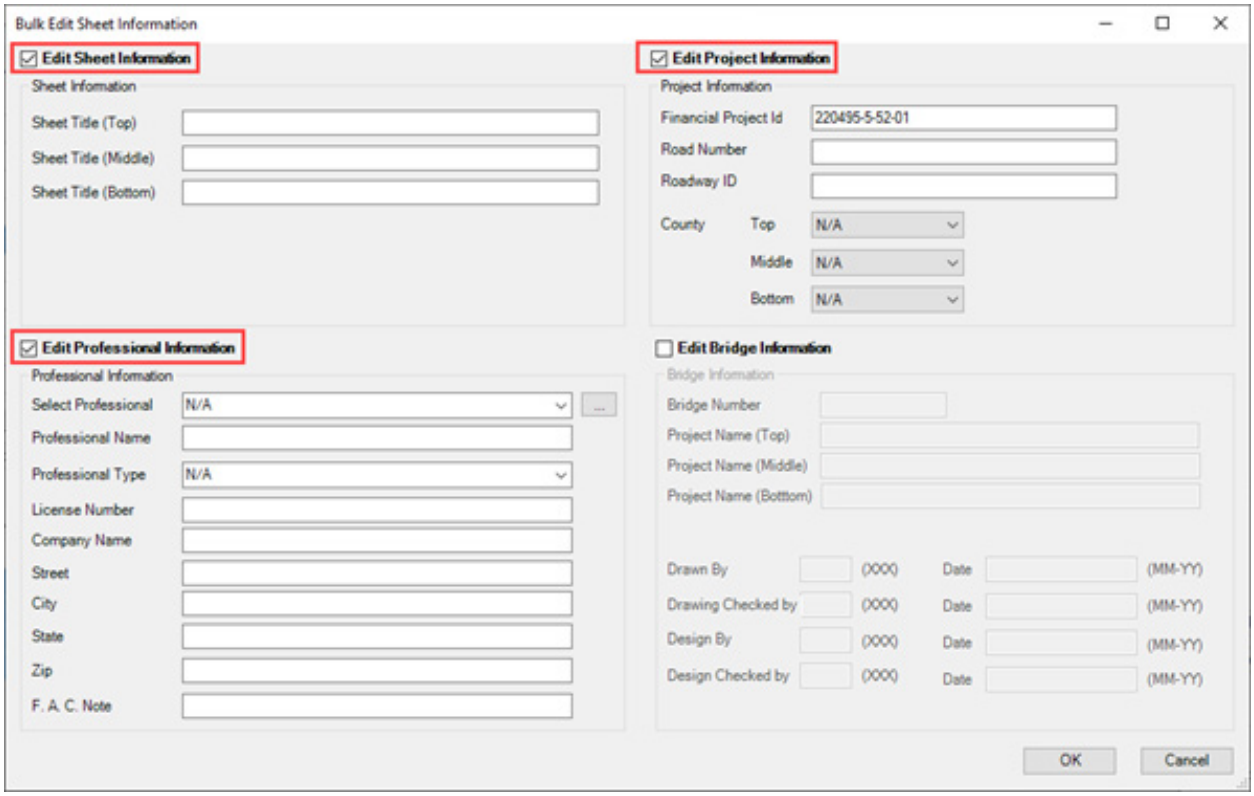
4. From the Available Sheets list, select the sheets listed for the \roadway\PLANRD01.dgn Short Filename category. With these 4 sheets selected, click Move to move these into the *Sheets To Process* portion of the dialog.



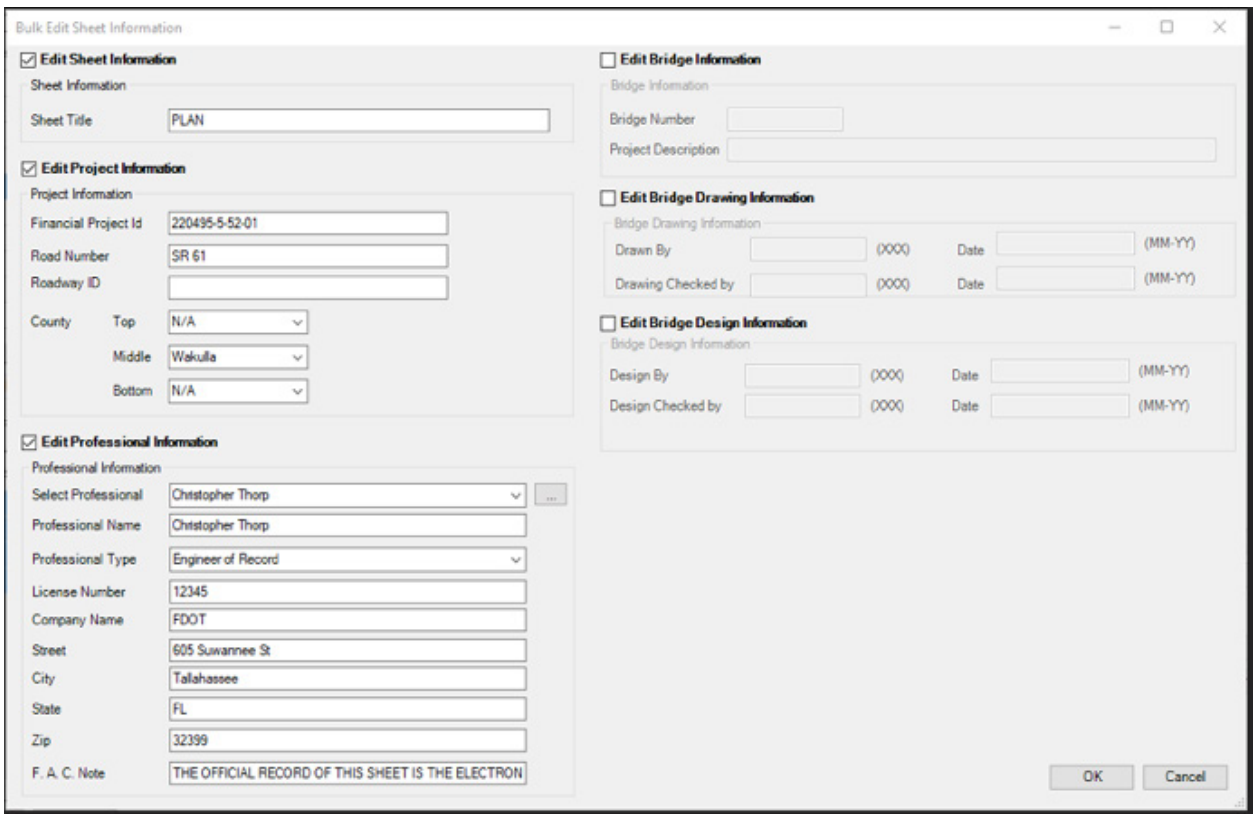
5. In the *Sheets to Process* portion of PSM, select all the sheets and right-click to bring up the context menu. From this menu, select **Bulk Update Sheet Information**.



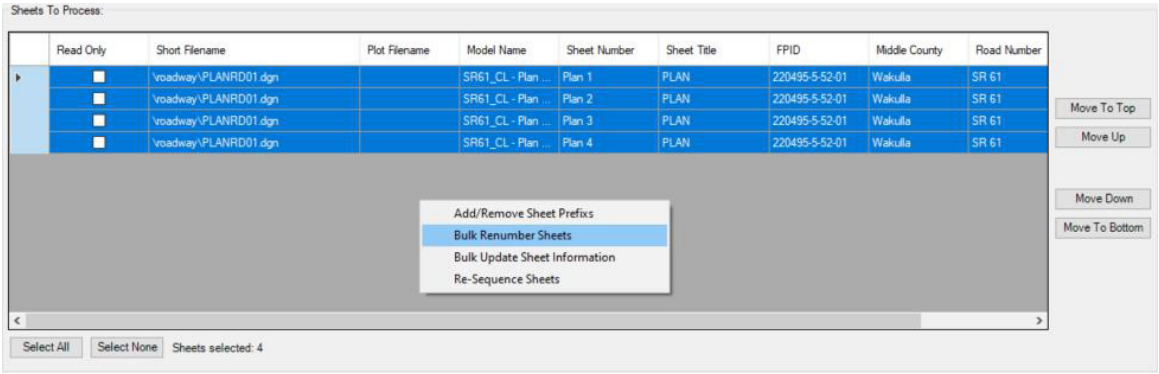
6. On the *Bulk Edit Sheet Information* dialog, enable *Edit Sheet Information*, *Edit Project Information*, and the *Edit Professional Information* toggles.



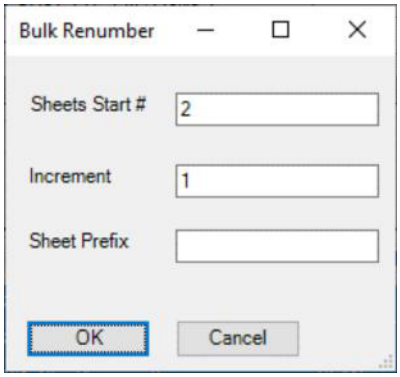
7. With these fields toggled on, fill out the dialog as shown below. Be sure to set the *Professional Information* by selecting the name within the dropdown list. Once this is all filled out, click **OK**.



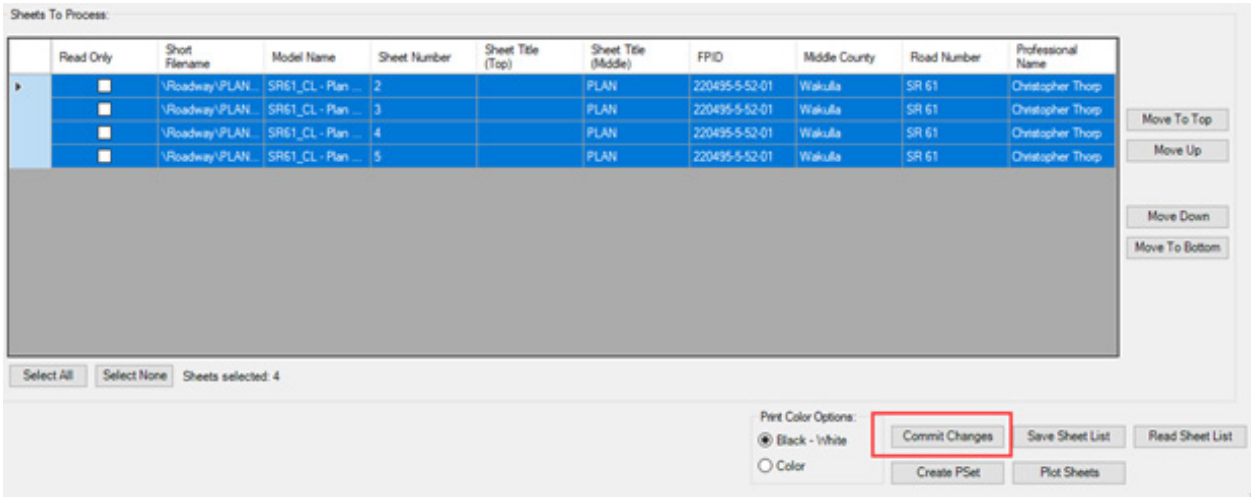
8. With the PLANRD01 models still highlighted, in the *Sheets to Process* section, right click to bring up the context menu and select **Bulk Renumber Sheets**.



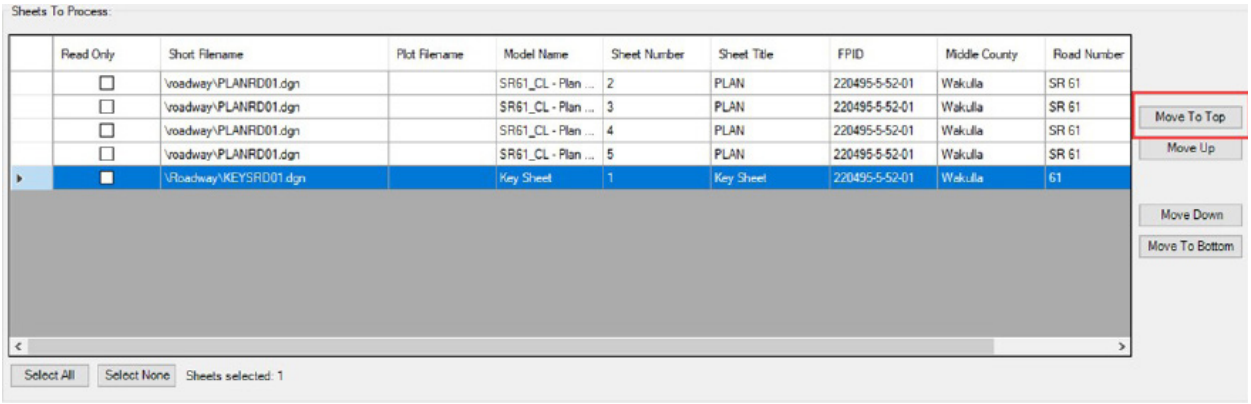
9. Fill out *Bulk Renumber* dialog as shown below. Click **OK** when finished. Once finished, be sure to open each sheet model in order to graphically update sheet number text field.



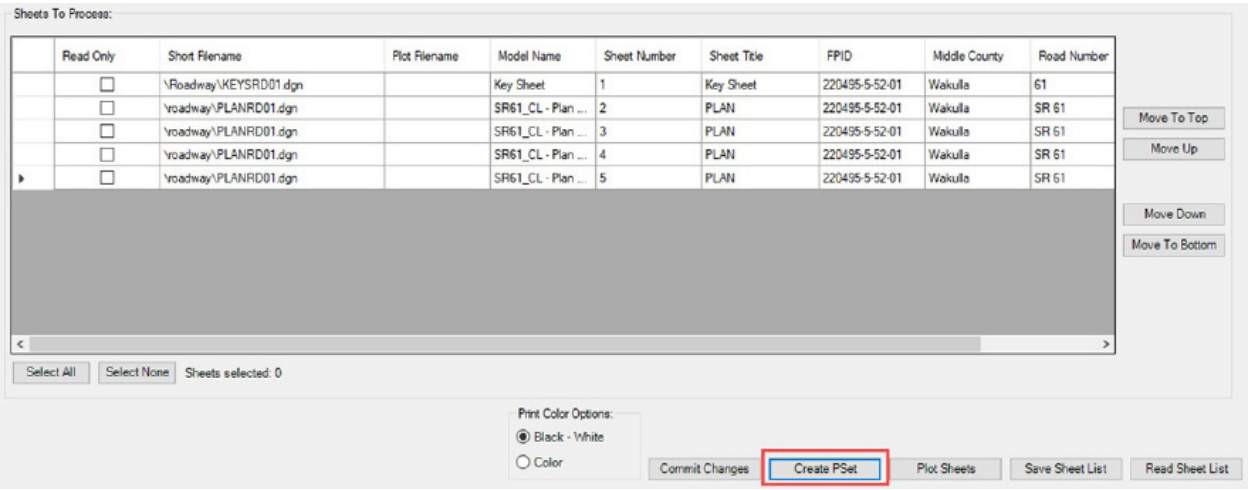
10. With the PLANRD01 models still highlighted, in the *Sheets to Process* section, click **Commit Changes** to apply the edits to the plan sheets. Once the changes are committed, close Plan Set Manager to see the edits applied. Also note, the signature note is applied automatically based on the *Professional Type*.



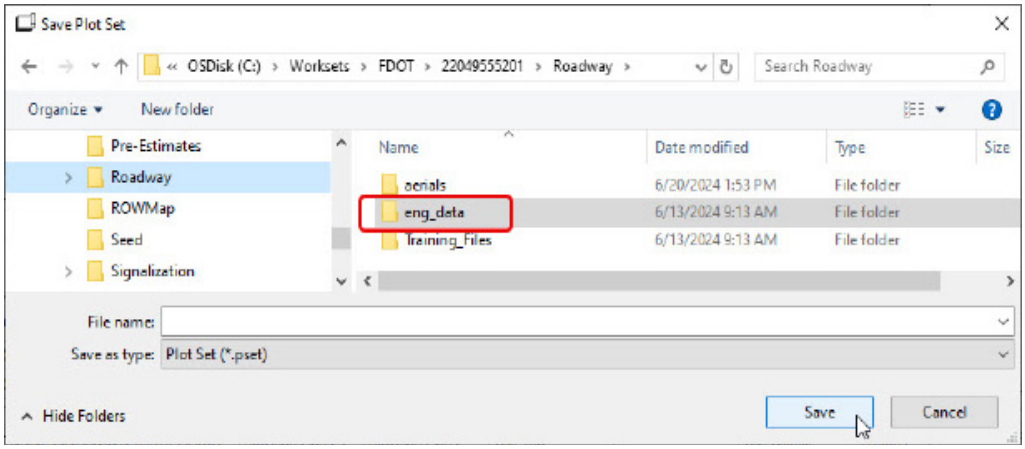
1. With the PLANRD01 sheets, highlight and add the KEYSRD01 file to the *Sheets to Process* list. Once the Key Sheet file is added, highlight, and move it to the top of the *Sheets to Process* list.



2. Click on **Create PSet** to create a print set for the files in the *Sheets to Process* list.

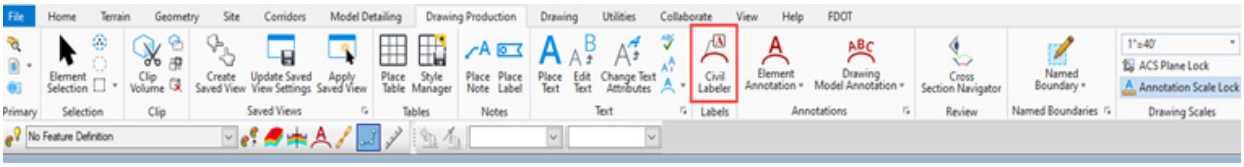


3. On the *Save Plot Set* dialog, browse to the eng_data folder within the Roadway folder and save the PSet file with the name *SR61.pset*.



4. Once the PSet is created, click the **Plot Sheets** button to plot the plan sheets. When the *Save Plot* dialog displays, browse to the eng_data folder within the Roadway folder and save the file as *22049555201.pdf*. Click **Save** and the pdf will process, create and open the file when completed.

10 Civil Labeler Workflow



This chapter will review the placing labels with the new Civil Labeler.

For more information and training on the Civil Labeler, visit the Bentley help link below:

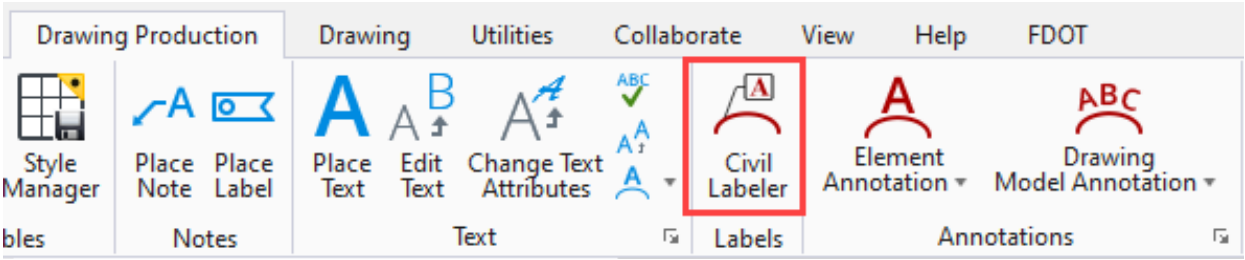
https://docs.bentley.com/LiveContent/web/OpenRoads%20Designer%20Help-v18/en/GUID-E3279912-1802-4728-B069-C13F8809F959.html

EXERCISES OVERVIEW

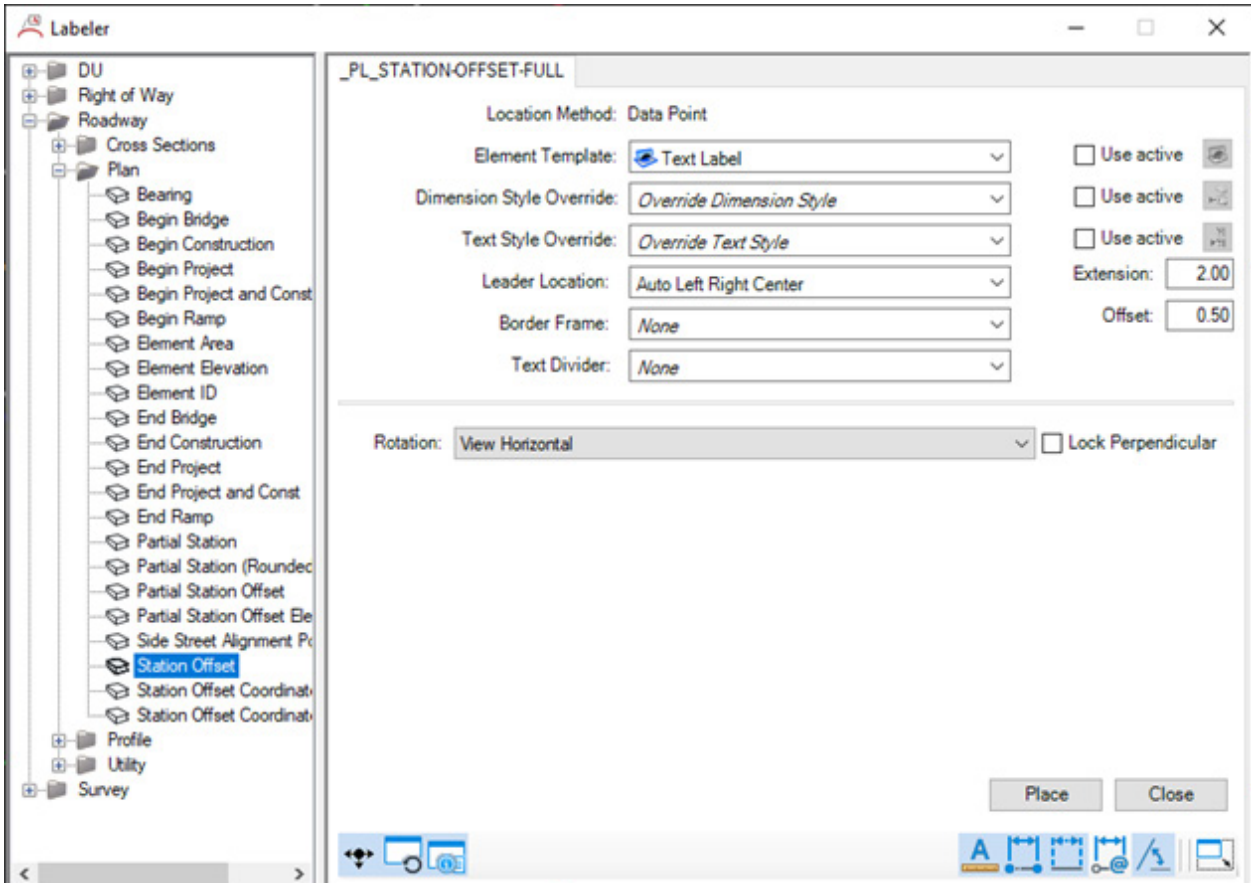
Exercise 10.1 *Place Labels on Plan Sheets*

1. Click on the FDOTConnect for OpenRoads Designer icon to launch ORD and open the C:\Worksets\FDOT\22049555201\Roadway*PLANRD_LABELING_01.dgn* file.

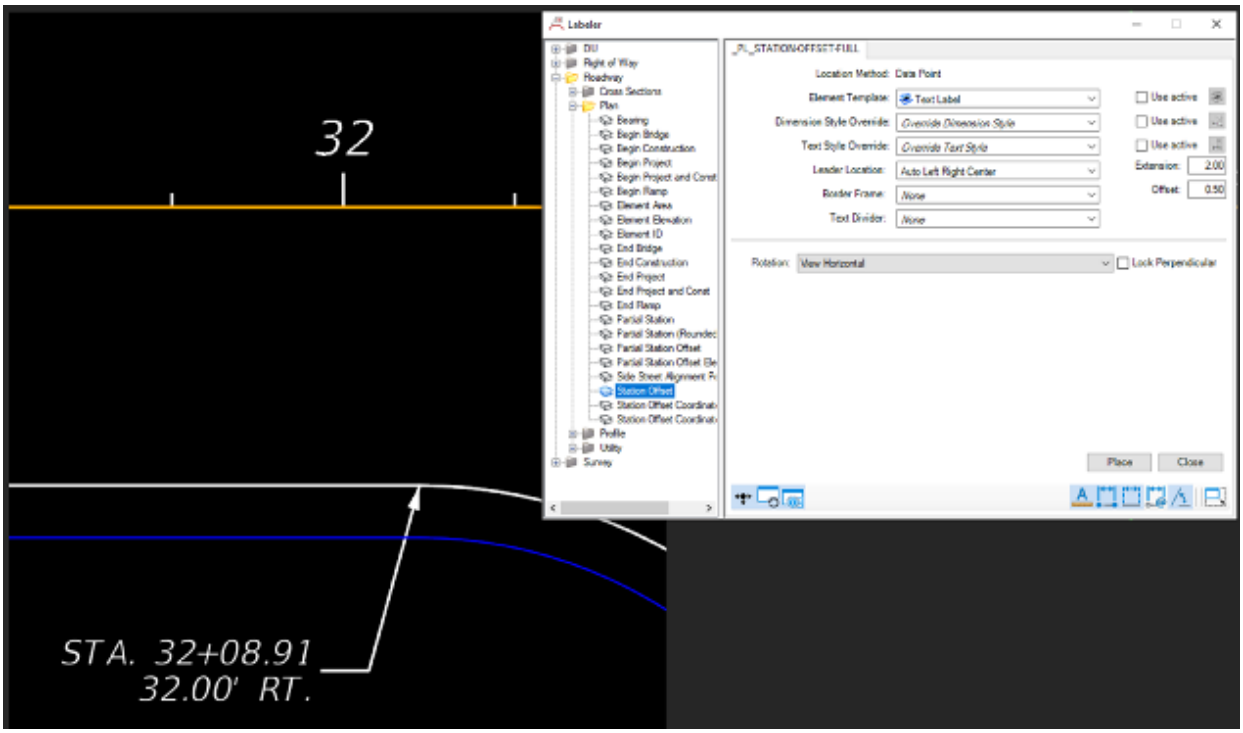
2. From the **Drawing Production** tab, select **Civil Labeler**.



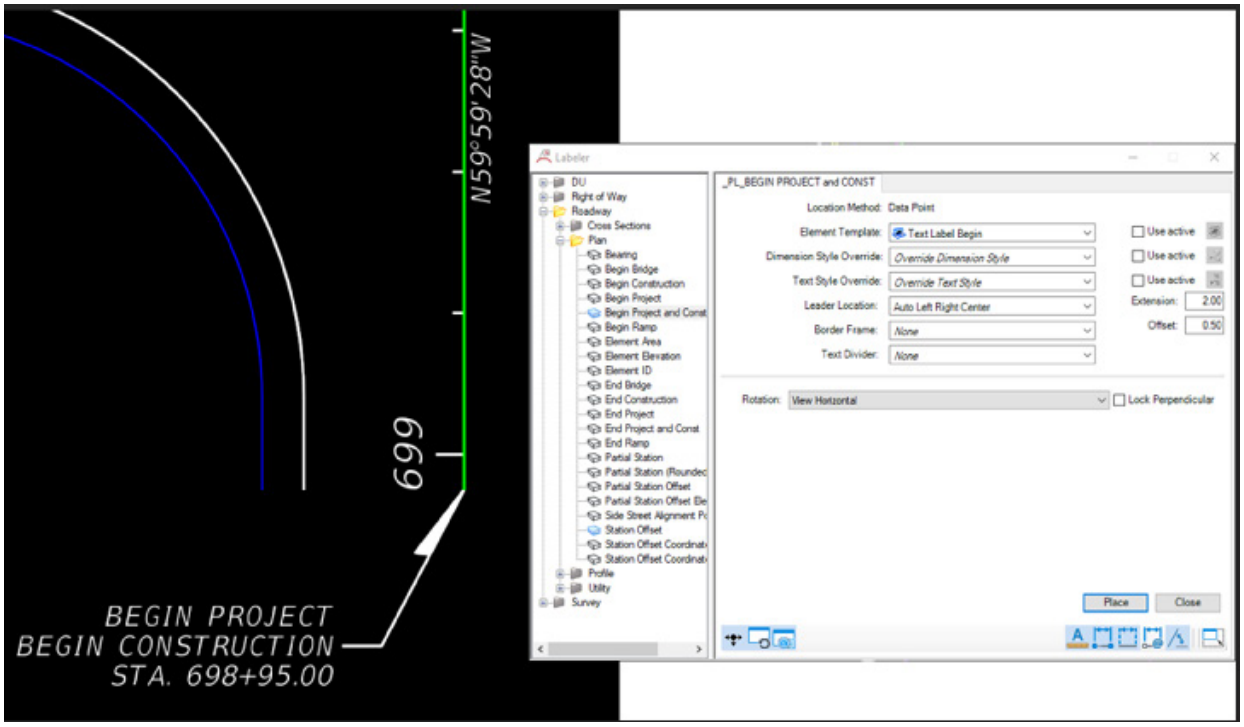
3. Expand the Roadway folder and in the Plan folder, select the *Station Offset* label and click **Place**.



4. Following the prompts in the lower left-hand corner, select the US98 alignment, snap to an Edge of Pavement line and then data point to place the label.



5. Use the same process to place the *Begin Project and Construction* label, this time selecting the SR61_ CL alignment.

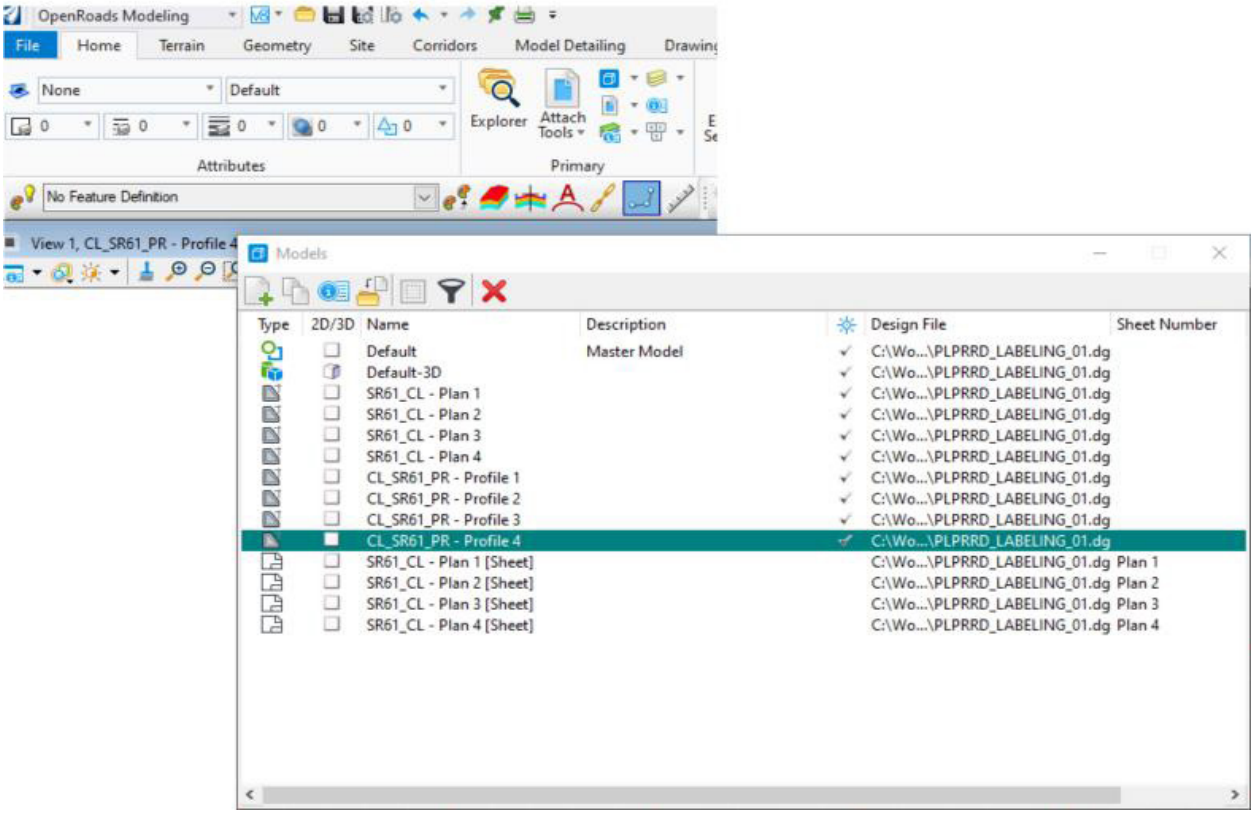


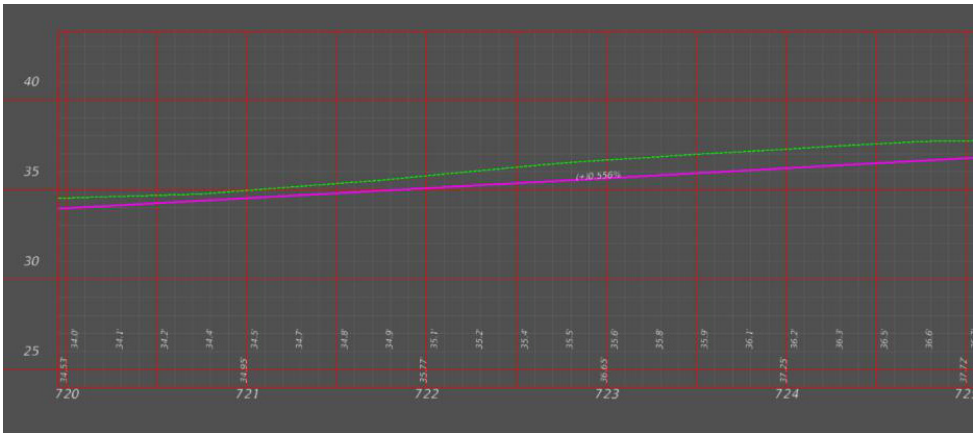
Exercise 10.2 *Place Labels on the Profile*

In this exercise, we are going to open the *PLPRRD_LABELING_01.dgn* to place civil labels.

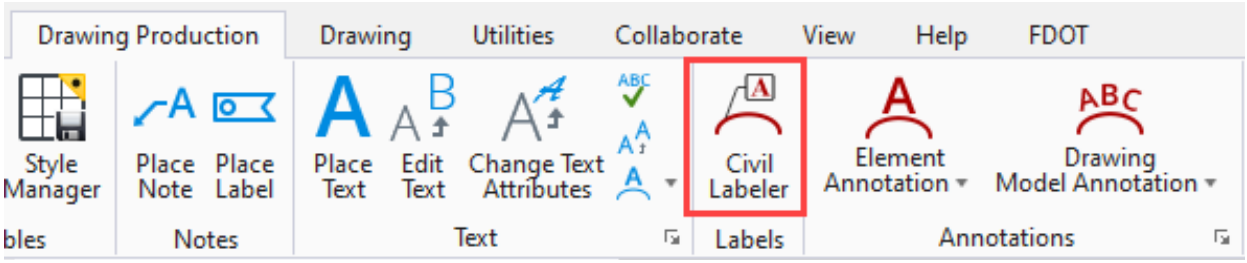
1. Click on the FDOTConnect for OpenRoads Designer icon to launch ORD and open the C:\Worksets\FDOT\22049555201\Roadway*PLPRRD_LABELING_01.dgn* file.

2. Once the file is open, select the **Home** Tab, select the *Models* dialog to switch to the **CL_SR61_PR - Profile 4** Drawing Model, highlighted below.

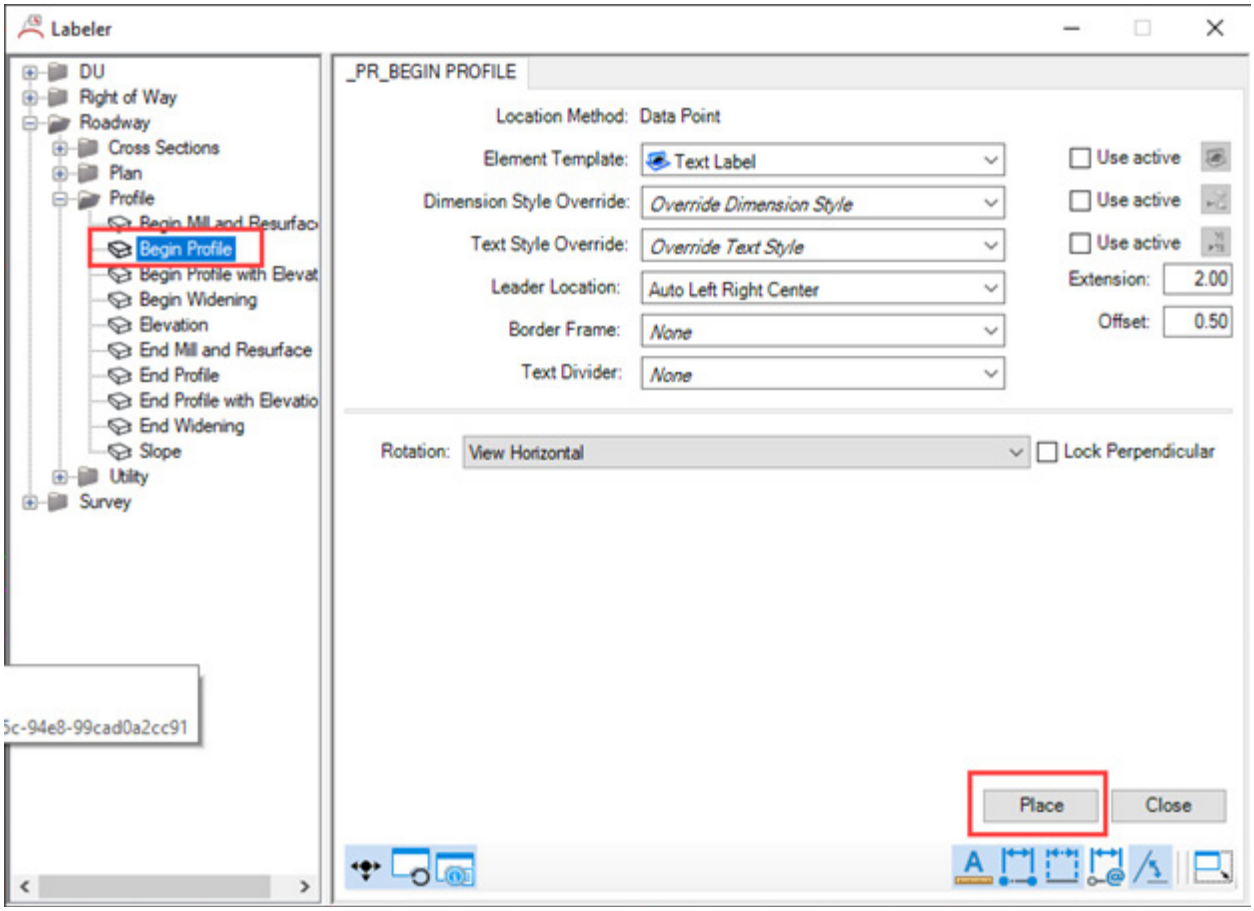




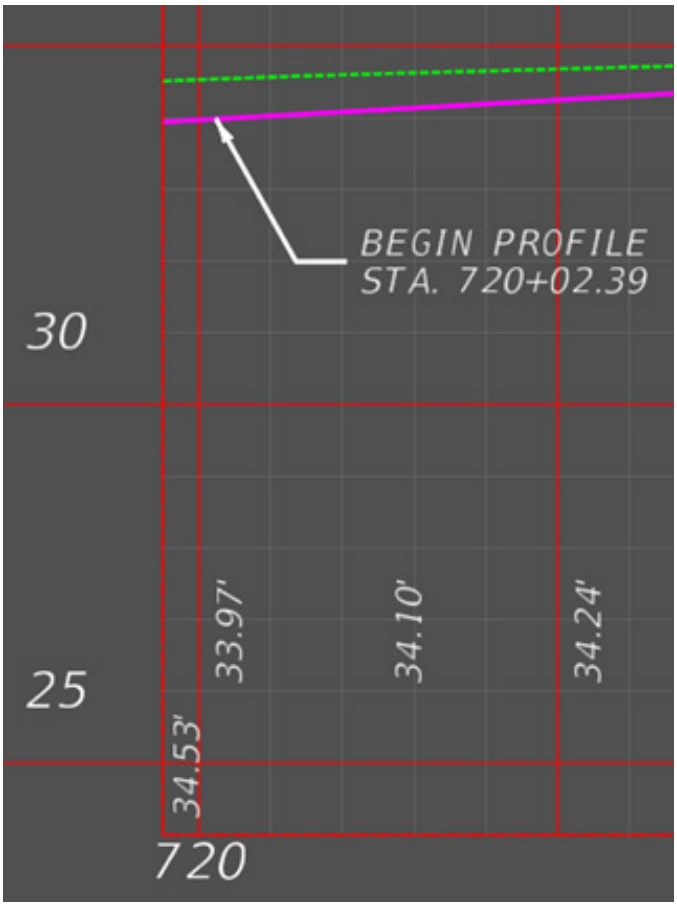
3. From the **Drawing Production** tab, select **Civil Labeler**.



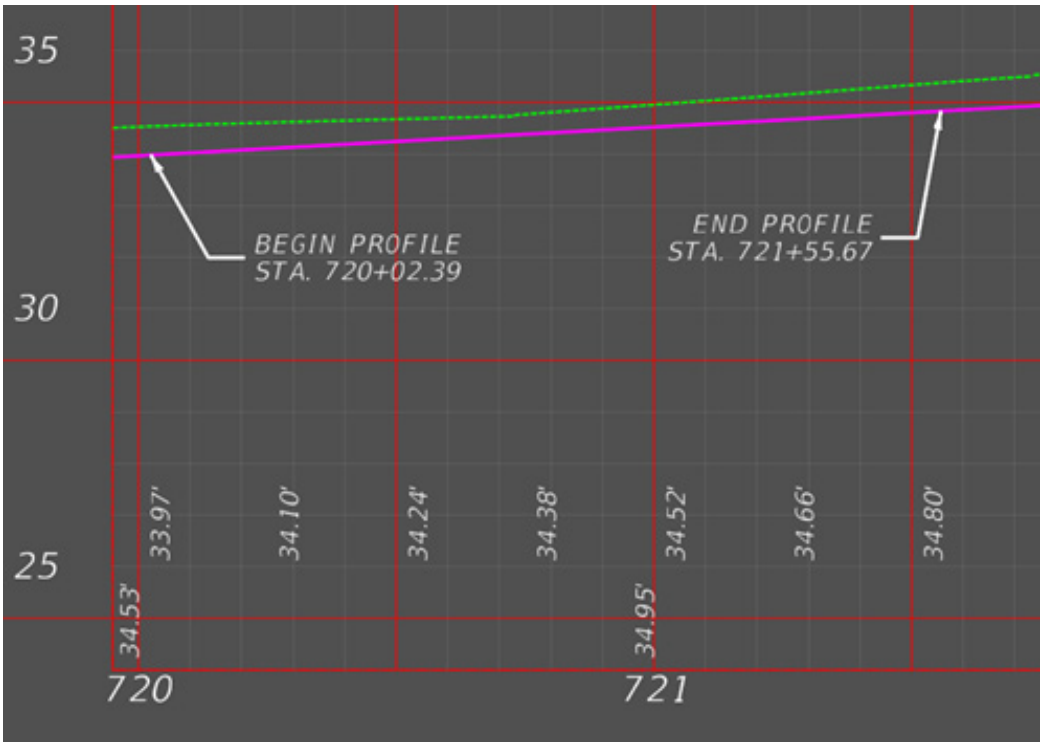
4. Switch to the **Drawing Production** Tab and launch the **Place Label** tool.



5. Following the prompts in the lower left-hand corner, select the CL_SR61_PR, snap to a location on the profile and then data point to place the label.



6. Use this same process to place the End Profile label.

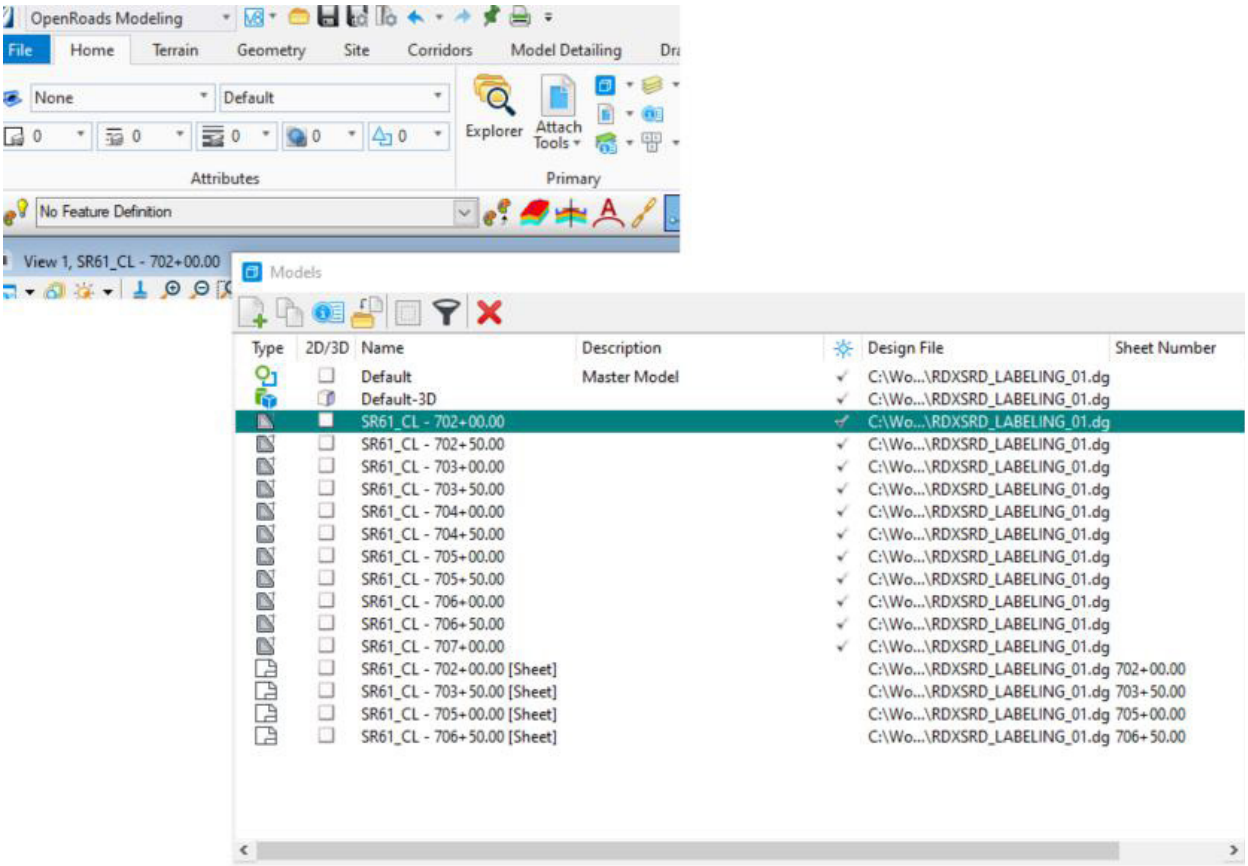


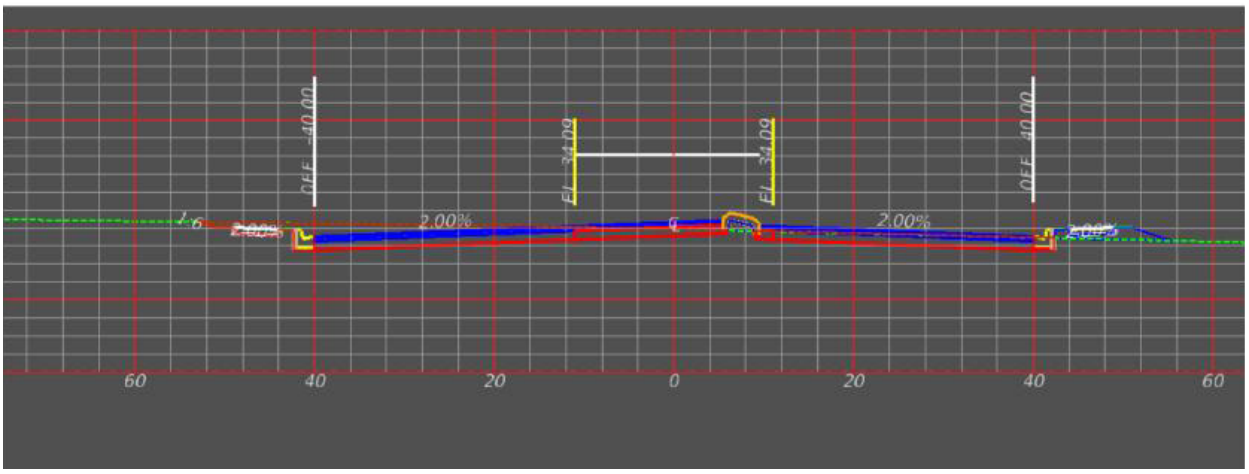
Exercise 10.3 *Place Labels on a Cross Section*

In this exercise, we are going to open the *RDXSRD_LABELING_01.dgn* to place dynamic labels. We will place an **Elevation, Offset-Elevation.**

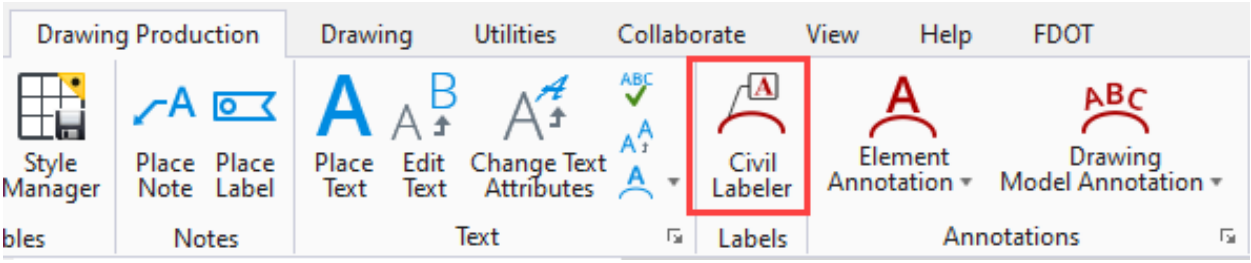
1. Click on the FDOTConnect for OpenRoads Designer icon to launch ORD and open the C:\Worksets\FDOT\22049555201\Roadway*RDXSRD_LABELING_01.dgn* file..

2. Once the file is open, select the **Home** Tab, select the *Models* dialog to switch to the **SR61_CL - 702+00.00** Drawing Model, highlighted below.

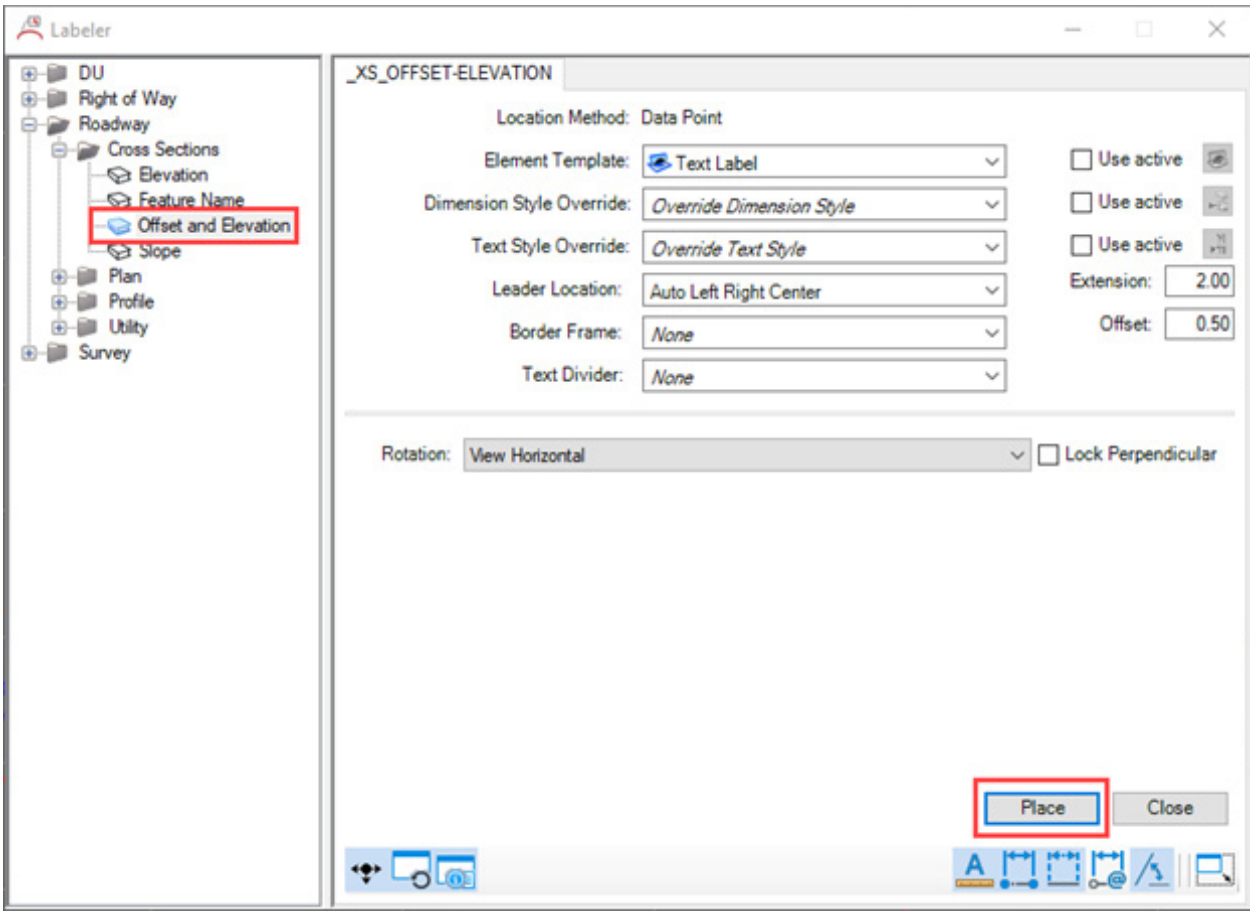




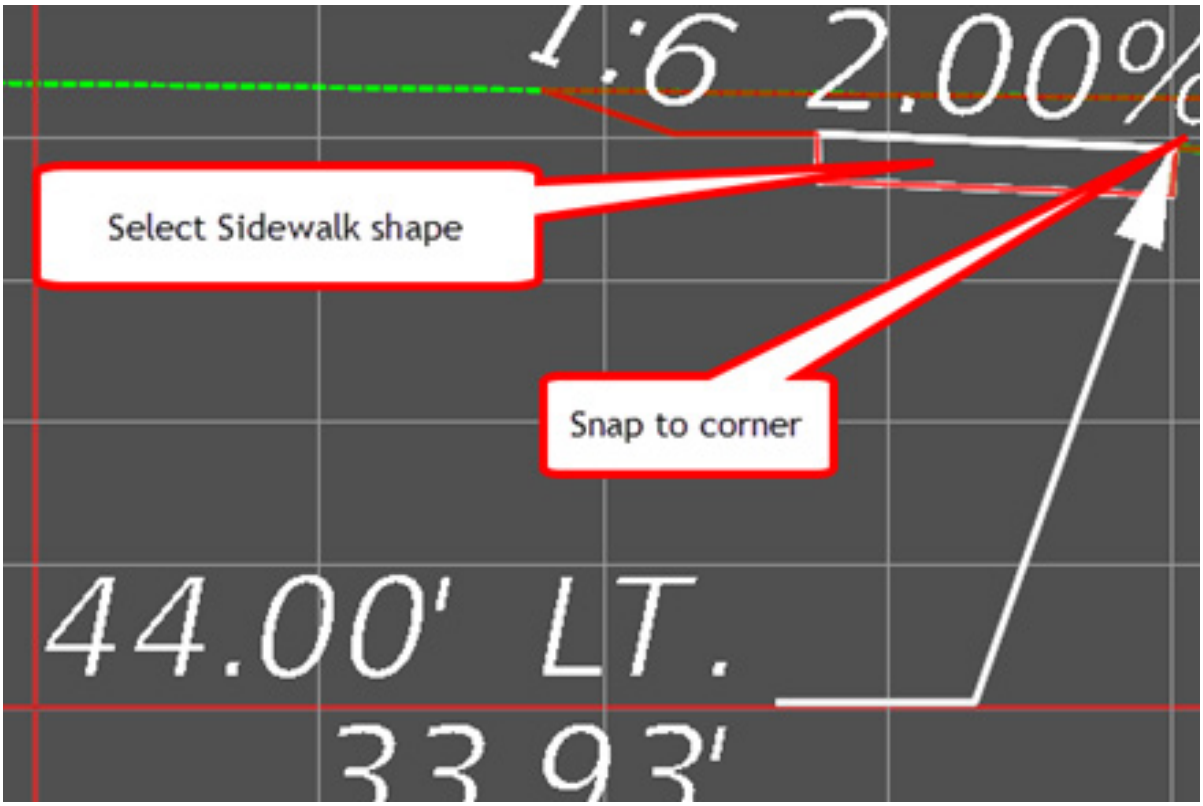
3. From the **Drawing Production** tab, launch the **Civil Labeler**.



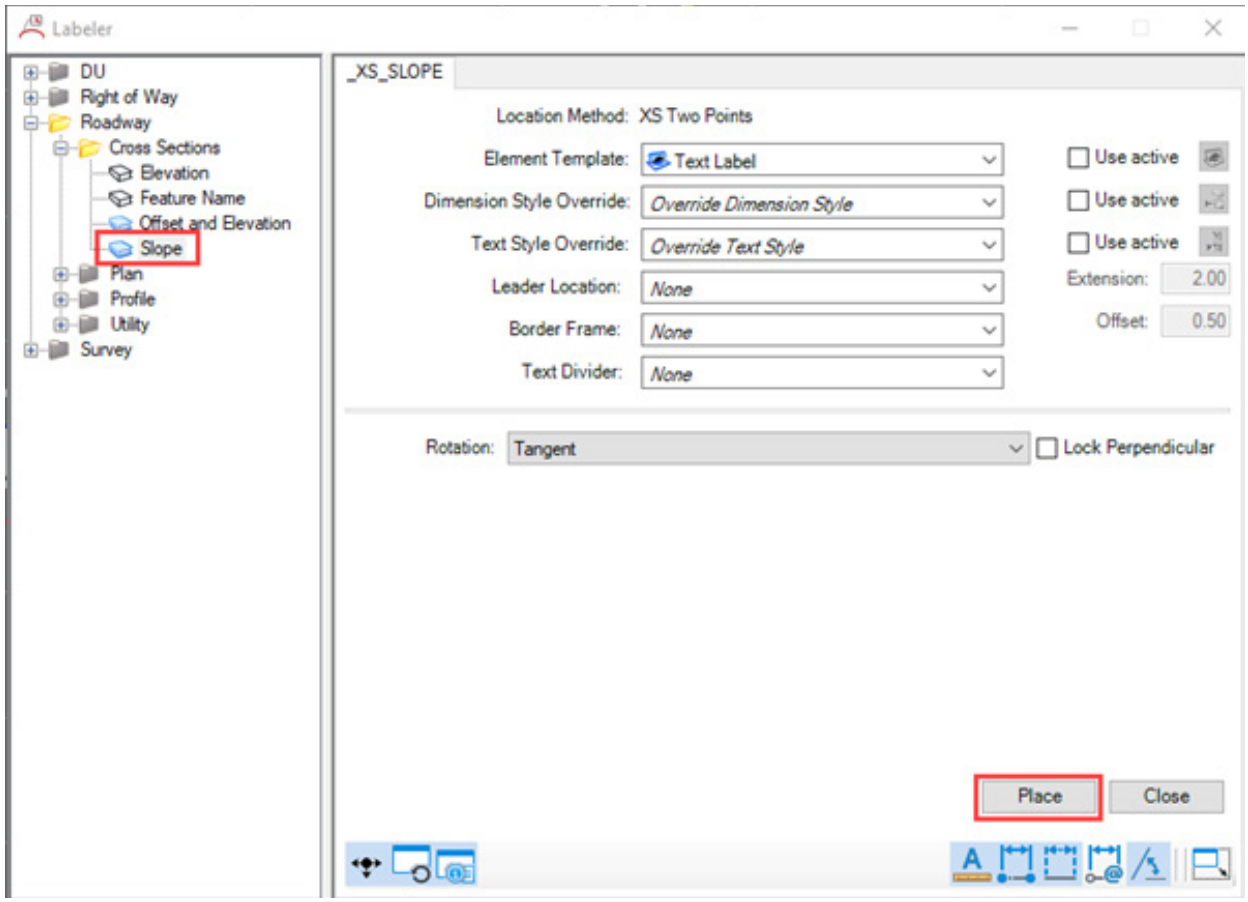
4. Expand the Roadway folder and in the Cross Sections folder, select the *Offset and Elevation* label and click **Place**.



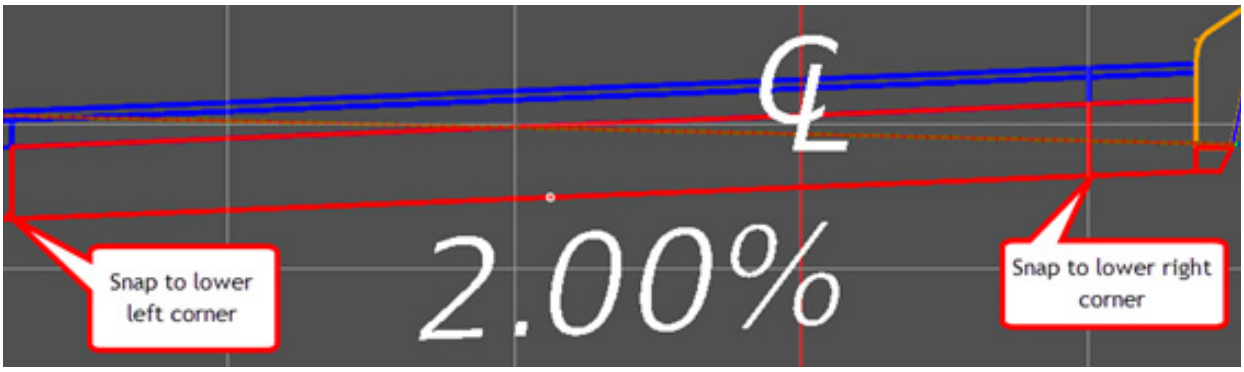
5. Following the prompts in the lower left corner, select the Sidewalk shape on the left side of the cross section. Once selected, snap to the inside top left corner of the shape and place the label out in space.



6. On the *Civil Labeler* dialog, select the *Slope* label and click **Place**.



7. Place the label following the Microstation prompts in the lower left-hand corner. First, snap to the lower left-hand corner of the LT_WidenBaseIn1 shape and then snap to the lower right-hand corner of the shape. Finally, place the label as shown below.



Contact
www.fdot.gov/cadd

Address
605 Suwannee St
Tallahassee, FL. 32399

Roadway Plans Development