



FDOTConnect for OpenRoads Designer



Traffic Plans Setup **COURSE GUIDE**

<https://www.fdot.gov/cadd>

State of Florida
Department of Transportation

FDOTConnect
for
OpenRoads Designer
Traffic Plans Setup

Course Guide

2024

PRODUCTION SUPPORT / CADD OFFICE

TALLAHASSEE, FLORIDA

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

FDOTConnect for OpenRoads Designer **Traffic Plans** *Signing, Pavement Markings And Lighting Application*

Description:

This is a 2-day training course that will go over the fundamentals for developing Traffic Plans. Participants will be introduced to Bentley OpenRoads Designer (ORD)CONNECT Edition – FDOT Traffic Tools developed for OpenRoads Technology specifically for Florida Department of Transportation (FDOT) projects using the FDOTCONNECT Workspace. Several new tools will be introduced including:

- Traffic Tools Setup and configuration files
- FDOT Signing Application
- Pavement Marking Application
- Traffic Design (Place Cell Group)
- Signalization Application
- Lighting Plans (Light Pole Manager)

Objectives:

- To learn **initial setup** required to start creating Traffic Plans
- To create and place Sign Assemblies and using the **FDOT Signs Application**.
- To create Proposed Pavement Marking Striping using the **Pavement Marking Application**
- To learn **Traffic Planning tools**, i.e. Place Cell Group, Place Conduit and Pay Item Update To create and place Signal Assemblies using the **Signal Design Application**
- To place cells and to draw conduit to FDOT design standards for **Lighting Plans**.
- To learn about the **Light Pole Manager** to create and place the Pole Data Table into Plan Sheets

Audience:

FDOT Traffic Designers and Engineers

Prerequisites:

Recommended: Basic knowledge of drawing tools, levels, details skills in MicroStation and understanding of the FDOT workspace for Open Roads Designer and OpenBridge Modeler. An overview of the essential elements of the FDOT design environment (CADD ESSENTIALS-Course Guide) as a prerequisite for this and other FDOT CADD training courses. Completing Bentley OpenBridge Modeler basic training courses for familiarity with tools and interface is also recommended.

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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)	<ul style="list-style-type: none"> • General form is Workflow (when applicable) > Tab > Group > Tool • File > Open • File > Settings > User > Preferences • OpenBridge Modeler (Workflow) > FDOT > Actions > Create File
Window actions	Bold	<ul style="list-style-type: none"> • Click the Apply button. • Click the Graphic Select button to the right of the <i>Horizontal Alignment Include</i> box. • In the Segment Type list, click Lines.
Window field names	Italic	<ul style="list-style-type: none"> • Key in Hemfield Road in the <i>Alignment Name</i> field. • Click the Graphic Select button to the right of the <i>Horizontal Alignment Include</i> field. • In the <i>Segment Type</i> list, click Lines.
Key-ins	Bold	<ul style="list-style-type: none"> • Key in Hemfield Road in the <i>Alignment Name</i> field.
File names	Italic	<ul style="list-style-type: none"> • Open the file <i>Working Graphics.dgn</i> in the C:\Bentley Training\GEOPAK 101\Project Setup\Practice\ folder.
File paths	Underline	<ul style="list-style-type: none"> • Open the file <i>Working Graphics.dgn</i> in the C:\Bentley Training\GEOPAK 101\Project Setup\Practice\ folder.
New terms or emphasis	Italic or Bold	<ul style="list-style-type: none"> • The Template Library contains <i>templates</i>, which represent typical sections of the proposed roadway. • The user is not to utilize this tool.

1

OPENROADS DESIGNER SETUP

OBJECTIVE

This chapter covers the initial setup required to start using this course guide.

In this chapter, the following topics will be covered:

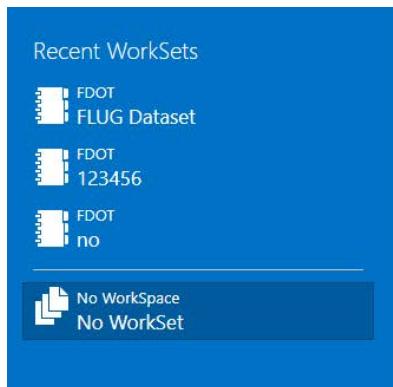
- FDOT Workspace
- FDOT Worksets
- Creating a New Workset
- Create File Process

INTRODUCTION

If this is your first-time opening FDOT OpenRoads Designer you will need to do some basic setup before you can begin your project design, this chapter will cover the basics.

FDOT WORKSPACE

When you launch FDOT ORD you are greeted with the following screen. ORD needs a starting point to begin, so you will need to point to a Workspace and WorkSet. The image below tells you that neither have been selected.

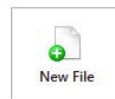
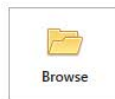


OpenRoads Designer CONNECT Edition

No WorkSpace ▾ No WorkSet

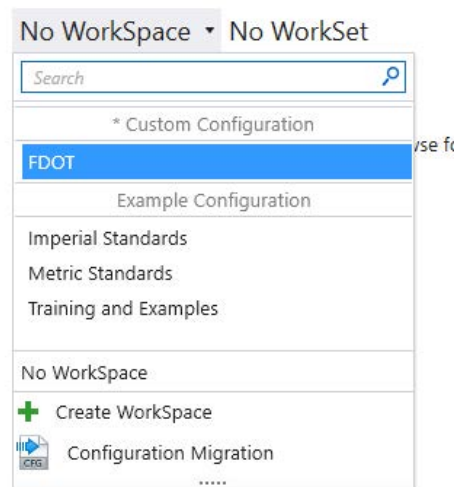
Recent Files

You haven't opened any files recently. To browse for a file, start by clicking on Browse.



To set a Workspace, select the pulldown to see the list of available workspaces and select **FDOT** as shown below.

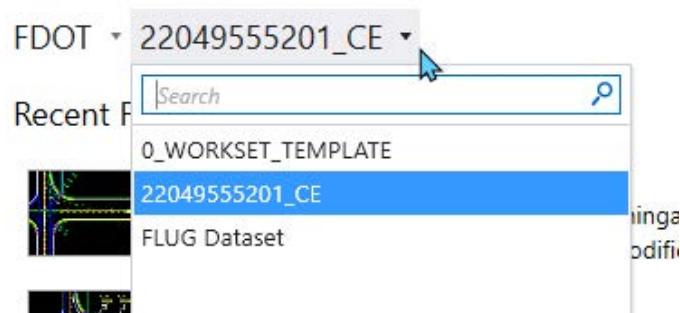
OpenRoads Designer CON



Not only can you select a workspace from this dialog, but you can also select other WorkSpaces in case you are working for multiple DOT's.

SETTING WORKSET LOCATION

Now that you have the proper WorkSpace and all the settings that are inclusive to that workspace, you need to set the WorkSet, which represents your active project folder and drawings. Using the pull down to display the list select the **22049555201_CE** Dataset workset, which is used for this Course Guide.

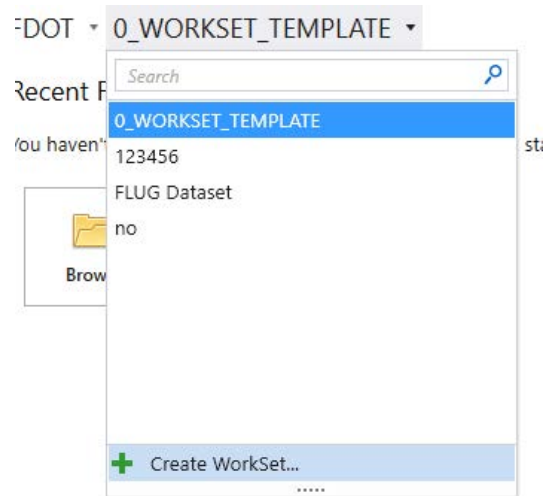


If you have worked in this workset before a list of recently opened files are visible and are ready to be opened. The Recent files list only applies for the current workset.



PROJECT SETUP

You do not need to do this for this manual, but this topic is for future reference on starting a new project from scratch using the FDOT WorkSpace, with the workspace set to FDOT, pulldown the Work Set List and select **Create WorkSet**.



The *Create WorkSet* dialog box opens, which you will fill in the Name, Description, Template, Location, and other data. In the template field, select `0_WORKSET_TEMPLATE`. Select OK when finished.

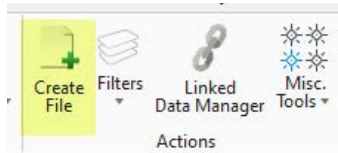
It is important to note that the first file you must open is the *_BlankFile.dgn*, this will allow you to start the design file creation process using the Create File application located on the FDOT Ribbon in ORD. The Blank File has a notification letting you know to not start any design file usage from this file. Using the Create File app applies proper symbology to the new design files.



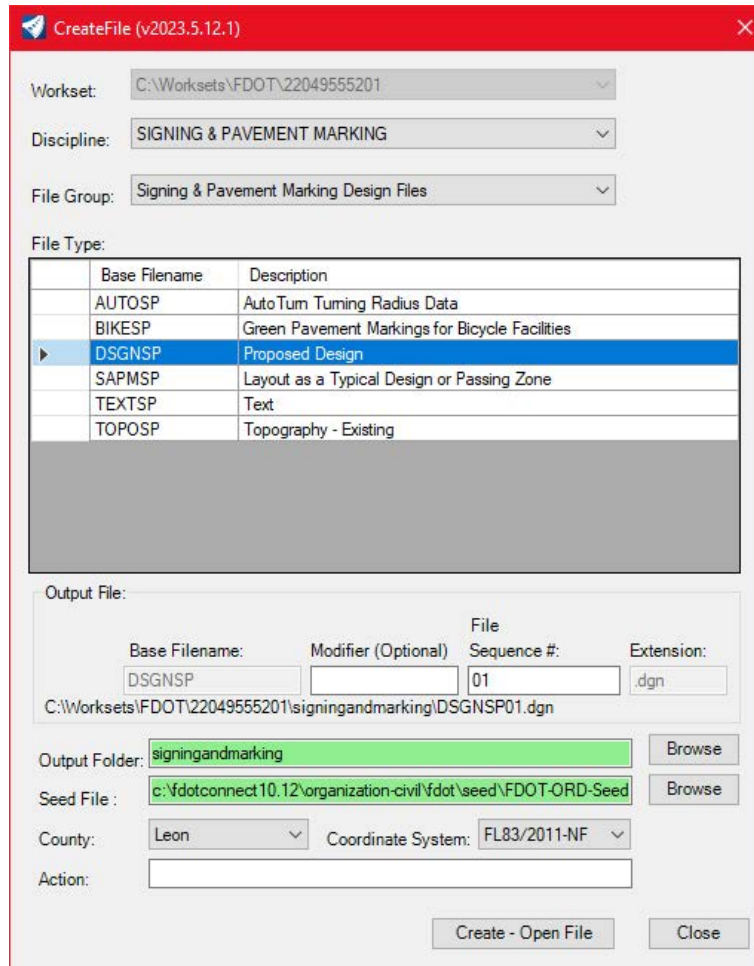
*This file should not be used for FDOT work.
Use the "Create File" application to create
QC Compliant files.*

CREATE FILE

This process has already been completed for this manual, but for reference the process to create project design files is covered in this section. Located on the FDOT Ribbon on the Actions panel is the Create File application.



Once selected the *Create File* dialog opens as shown. A description of each option is listed below.

A screenshot of the 'CreateFile (v2023.5.12.1)' dialog box. The dialog has a red title bar and contains several sections:

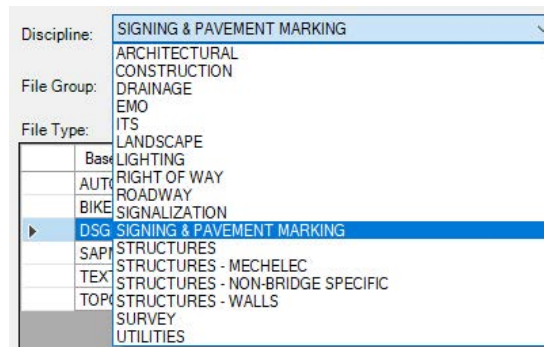
- Workset:** C:\Worksets\FDOT\22049555201
- Discipline:** SIGNING & PAVEMENT MARKING
- File Group:** Signing & Pavement Marking Design Files
- File Type:** A table with columns 'Base Filename' and 'Description'. The 'DSGNP' row is selected.
- Output File:** Fields for Base Filename (DSGNP), Modifier (Optional), File Sequence # (01), and Extension (.dgn). The full path is shown below.
- Output Folder:** signingandmarking (with a Browse button).
- Seed File:** c:\fdotconnect10.12\organization-civil\fdot\seed\FDOT-ORD-Seed (with a Browse button).
- County:** Leon
- Coordinate System:** FL83/2011-NF
- Action:** An empty text field.
- Buttons:** 'Create - Open File' and 'Close'.

WORKSET

The workset by default should be the current workset where your project is located, this will allow the create file to create and place new files in the proper project folder.

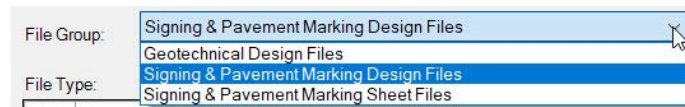
DISCIPLINE

The signing and Pavement marking design files will be in the Roadway Discipline. The discipline choice controls what filenames are used.



FILE GROUP

The File Group controls what component discipline is displayed upon selection. The S&PM plans will use the Signing and Pavement Marking Files File Group. The options are shown below.



FILE TYPE

The File Type displays the Base Filename along with a Description of what the Filename contains.

OUTPUT FILE

The output file section displays the actual name of the file including the File sequence number and Extension. A modifier entry box is also available as an optional entry. A path is displayed showing the name and the location of where the app will put the design file.

OUTPUT FOLDER

The Output Folder is automatically selected as the location of the file based on FDOT Standards. If the box is green that means it has found the project folder structure and the target folder exists. If the box is red that means the target folder does not exist within the project folder. There is a Browse button available which will allow you to search for the folder.

SEED FILE

The seed file is automatically selected based on standards; however, the designer can browse to a different one if required.

COUNTY & COORDINATE SYSTEM

The County and Coordinate System are linked, if the designer changes the County the coordinate System will change, if the new county is in a different Coordinate System.

CREATE - OPEN FILE

The Create – Open File when selected will create and open the file in the background. The designer can create as many files at once as needed. When desired files are created select close to exit the dialog.

NOTE *There will be two additional files that will have to be a part of the workset especially if you copy or move the project. A sample of them is shown below.*

22049555201_CE	3/5/2020 10:25 AM	Bentley MicroStati...	6 KB
22049555201_CE.dgnws	3/5/2020 10:25 AM	DGNWS File	72 KB

EXERCISE OVERVIEW

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EXERCISE 1.1 *Creating Design Files*

This exercise will create the files necessary for using this training manual. The files you will create are the Signing and Marking, Signalization, & Lighting.

1. The first file we will create is the Signing and Marking design file. On the FDOT ribbon select **Create File** and match image below for file creation. The green highlighted information shows the folder that the new file will be pushed to.
2. Select **Create – Open File**, you can create multiple files from one session of create file.=

Base Filename	Description
AUTOSP	AutoTurn Turning Radius Data
BIKESP	Green Pavement Markings for Bicycle Facilities
▶ DSGNSP	Proposed Design
SAPMSP	Layout as a Typical Design or Passing Zone
TEXTSP	Text
TOPOSP	Topography - Existing

3. Next create the Signalization design file. See image below for parameters.
4. Select **Create – Open File**.

Workset: C:\Worksets\FDOT\22049555201

Discipline: SIGNALIZATION

File Group: Signalization Design Files

File Type:

	Base Filename	Description
▶	DSGNSG	Proposed Design and Information
	MSSGSG	Mast Arm Detail and Tables
	TEXTSG	Text
	TOPOSG	Topography - Existing

Output File:

Base Filename:	Modifier (Optional)	File Sequence #:	Extension:
DSGNSG		02	.dgn

C:\Worksets\FDOT\22049555201\signalization\DSGNSG02.dgn

Output Folder: signalization

Seed File: c:\fdotconnect10.12\organization-civil\fdot\seed\FDOT-ORD-Seed

County: Wakulla Coordinate System: FL83/2011-NF

Action:

5. Next Create the Lighting design file.

6. Select **Create – Open File**

Workset: C:\Worksets\FDOT\22049555201

Discipline: LIGHTING

File Group: Lighting Design Files

File Type:

	Base Filename	Description
▶	DSGNLT	Proposed Design
	TEXTLT	Text
	TOPOLT	Topography - Existing

Output File:

Base Filename:	Modifier (Optional)	File Sequence #:	Extension:
DSGNLT		02	.dgn

C:\Worksets\FDOT\22049555201\lighting\DSGNLT02.dgn

Output Folder: lighting

Seed File: c:\vdotconnect10.12\organization-civil\fdot\seed\FDOT-ORD-Seed

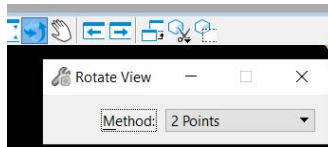
County: Wakulla Coordinate System: FL83/2011-NF

Action:

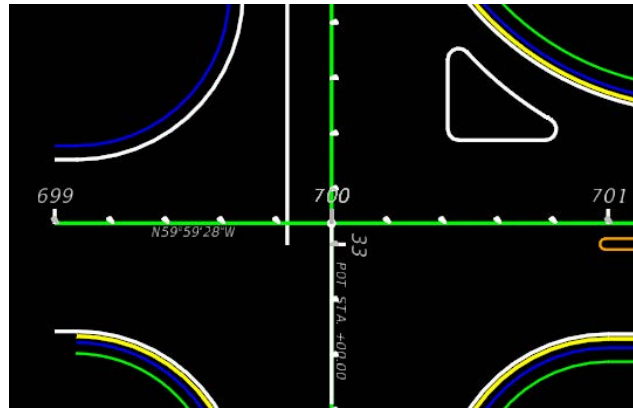
EXERCISE 1.2 Referencing Design Files

In this exercise the designer will reference the necessary files into each design file just created.

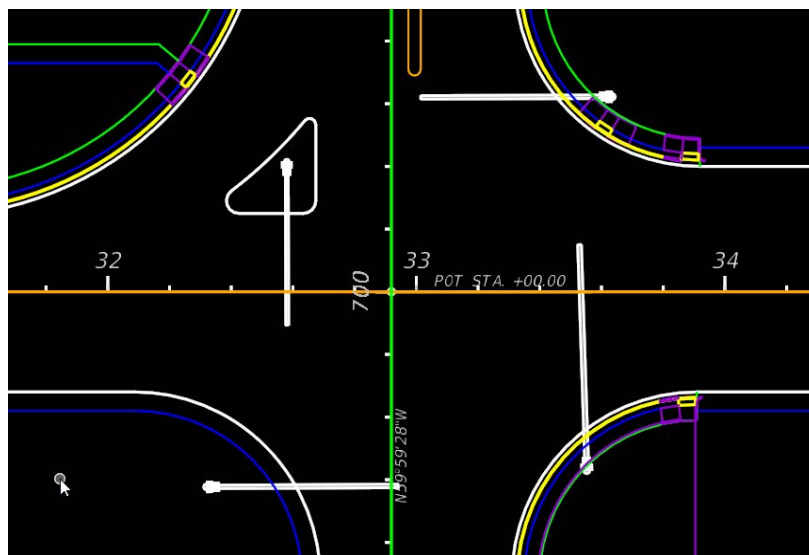
1. Open the *DSGNP01.dgn* design file.
2. On the Home ribbon click on **References**. Attach the *DSGNRD01* and *ALIGNRD01*, accept the defaults and click ok. Both files are in the Roadway folder.
3. With both files attached click on **Fit View** .
4. Next use **Rotate View with 2-point option**.



5. The drawing should be rotated as shown below.



6. Open the *DSGNLT01* and attach the same files as in the previous exercise.
7. Open the *DSGNSG01* and attach the same files as in the previous exercise.
8. Rotate the view for the signal design file as shown below.



2

SIGNING TOOLS

OBJECTIVE

This chapter covers the sign applications available in the FDOT ORD Statekit. There are Cell drawing files included, containing all sign cells from the latest version of the ***M.U.T.C.D.*** and ***Standard Highway Sign*** book. These cells can be placed anywhere within the design file using the FDOT sign tool, which also adds the appropriate pay item number upon placement.

In this chapter, the following topics will be covered:

- FDOT Signs application
- Guide SIGN 2024.8.2

INTRODUCTION

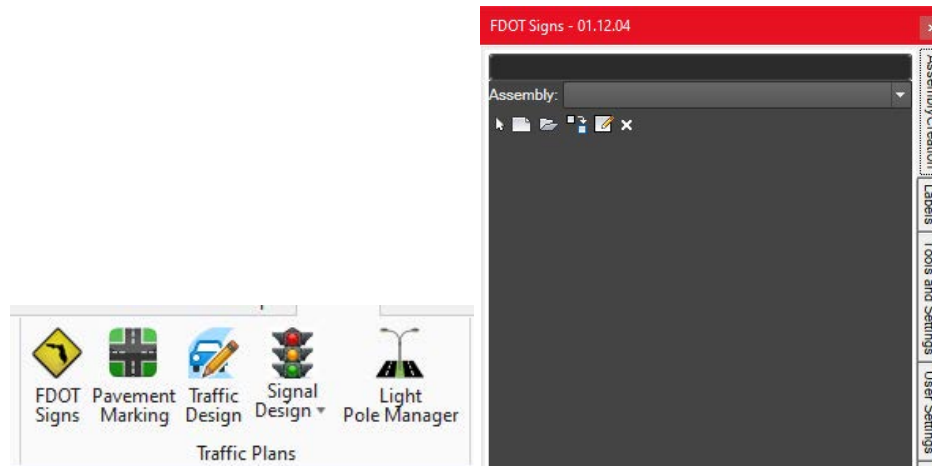
At this point, the designer may have an inventory of existing signs for their project. The designer must decide which signs need to be removed, relocated, or replaced. This work should be done in the proposed design file, *DSGNP01.dgn*.

The FDOT Signs program is the recommended source for placing proposed and existing sign cells to follow the FDOT workflow. It allows the designer to build sign assemblies and place them in the design file. The signpost contains the pay item data required to be quantified., the panel contains no pay item data, unless it is a panel only option. The FDOT signs application uses its own xml file (fdot.signs.xml) to assign the correct symbology including pay item data. It is maintained and modified by the FDOT CADD office delivered with the workspace. It is recommended that the user not modify this file.

GuideSIGN is a sign design program available from Transoft Solutions. It is recommended that users seeking training on using the program look on the Transoft site for information. Limited support is provided for GuideSign by the CADD office.

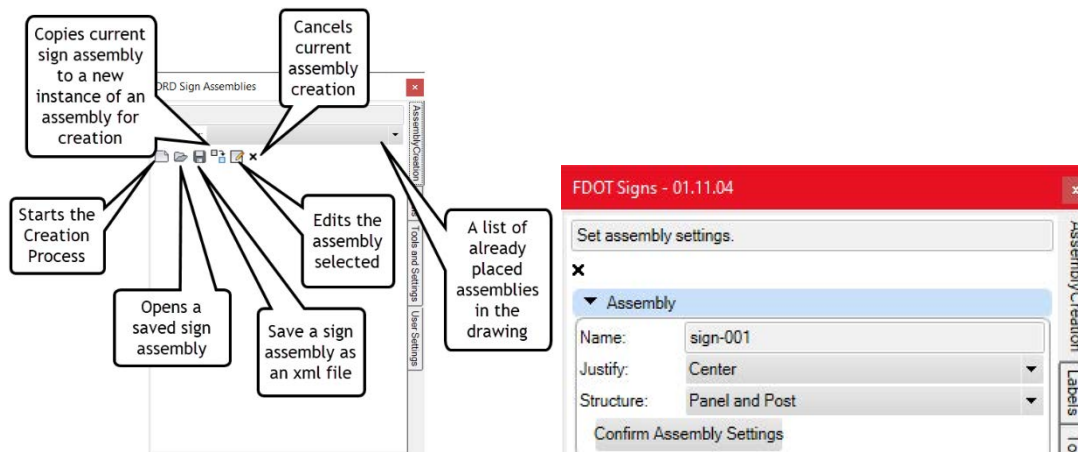
FDOT SIGNS APPLICATION

Accessible from the FDOT Ribbon on the Traffic Plans panel, the FDOT Signs Application is designed to assist in the creation and placement of standard sign panels and posts in the signing and marking plans. This tool uses a separate xml file that contains all pay item data and sizes required to quantify correctly. All the signs that are in the *Standard Highway Sign Book* and the *Florida Roadway and Traffic Design Standards* have been included. The application is a palette-based program.



The FDOT Signs App has four tabs: **Assembly Creation, Labels, Tools and Settings, & User Settings.**

ASSEMBLY CREATION



We will start when the start assembly button is selected. The dialog box shown above right opens.

✕ **Cancels Assembly Creation** - When selected it cancels the assembly creation process and returns to the default dialog as shown above left.

Name - Designer can assign a name, or an automatic default name will be used. A 3-digit counter is added at the end, this allows same named assemblies to exist in the design file without being overwritten.


Justify - Allows the panel(s) to be set either Left, Center, or Right in the assembly.


Structure - The designer can designate the assembly structure as Panel and Post, Panel Only, Panel and Post Combined, or Post Only.

Confirm Assembly Settings - This is selected when the assembly parameters are set, and the designer is ready to move on to the next step.

ASSEMBLY CREATION - PANEL

The panel assembly portion of the process is where you pick the panel(s) to add to the assembly and preview your work before moving on to the next step.

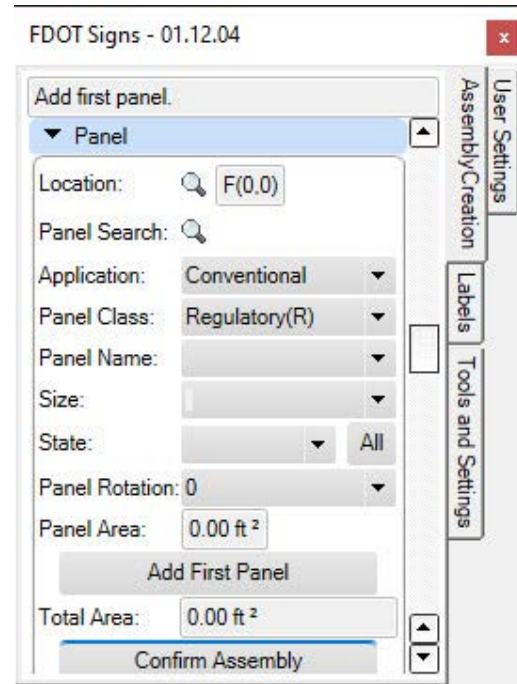
 **Location** – When selected a grid box opens showing where the panels are in relation to each other in the assembly. The designer can also change locations from here by right clicking on the populated grid box for Relocate or Remove options. The grid box also contains the back side of the assembly if it is a double-sided assembly.

 **Panel Search** – Allows the designer to search for a panel by name and bypasses the navigation to the desired panel.

Application - This gives the designer the ability to select from the list of options including Conventional, Expressway, Freeway, Minimum, or Oversized. The selections made upstream affect what is available downstream in the selection process of other options.

Panel Class – Panel Class is another way to shrink down the panels to choose from, it contains a big list of classes; Regulatory (R), Route Markers (M) and more, the letters in parenthesis designate the panel name. Example being Route Markers (M) = M1-7 panel name.

Panel Name – With the previous selections made the list is culled down to the available panels and will populate with the panel name.



The screenshot shows a software window titled "FDOT Signs - 01.12.04" with a close button (X) in the top right corner. The window contains a "Panel" creation dialog. At the top, it says "Add first panel." Below this is a "Panel" dropdown menu. The "Location" field contains "F(0,0)". The "Panel Search" field is empty. The "Application" dropdown is set to "Conventional". The "Panel Class" dropdown is set to "Regulatory(R)". The "Panel Name" field is empty. The "Size" dropdown is empty. The "State" dropdown is set to "All". The "Panel Rotation" dropdown is set to "0". The "Panel Area" field shows "0.00 ft²". Below these fields are two buttons: "Add First Panel" and "Confirm Assembly". At the bottom, the "Total Area" field shows "0.00 ft²". On the right side of the dialog, there are three tabs: "User Settings", "Assembly Creation", and "Tools and Settings". The "Assembly Creation" tab is currently selected.

Size – The designer can select the Search icon to select the available sizes that go with the panel selected, if a size is not preset you can enter in a custom size. An example entry being 24x36 which will equal 6 S.F. It is the designer's responsibility to know what size sign to use, do not assume this tool has the intelligence built in to determine the correct size to set for the sign panels of the project.

State – The designer has 4 states to choose from; Proposed, Existing to Remain, Relocate, Remove, Repair, Relocate and Remove. The **All** button will force the state chosen to all panels in the assembly.

Panel Area – This displays the Square Footage of the current panel that is being added to the assembly.

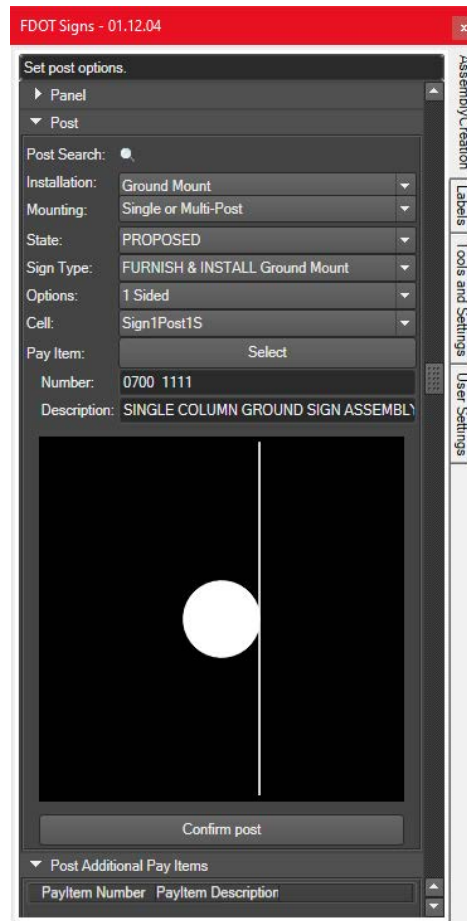
Panel Preview – When a panel is selected it displays a preview of how the panel(s) will look before placement.

Add First Panel – The designer must select this button to add it to the assembly, if another panel needs to be added the designer will repeat the previous steps to add it.

Total Area – This displays the total Square Footage of all panels that are part of an assembly.

Confirm Assembly – When all panels have been added to the assembly and the designer is ready to move on to the post options click on Confirm Assembly.

ASSEMBLY CREATION - POST



Post Search – Allows designer to search for a specific post which will avoid the pulldown navigation to choose the post.

Installation – The designer selects which installation method to use. The following are available, Ground Mount, Panel Only, and Overhead.

Mounting – This allows the designer to select the type of sign mounting, options being Single or Multi-Post, Sign Beacon, Delineator, Highlighted Sign, Object Marker, Internally Illuminated Sign, Dynamic Message Sign Support Structure, or Electronic Display Sign.

State – There are several states available; Proposed, Existing to Remain, Relocate, Remove, and Proposed/Remove.

Sign Type – The options displayed to choose from depend on the type of State selected.

Options – This pull down gives the designer the ability to pick whether the sign is one sided, two sided, or single post or multiple posts. The options available are based on the previous selections made.

Cell – This pull down gives the designer the ability to pick a different post cell such as 2,3,4 sided and number of posts. The sign tool selects a default post based on parameters entered, but the user can override the post selection by using this feature.

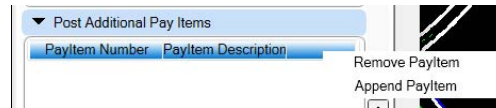
Pay Item – Number – Description – This allows the user to select additional pay item numbers to the post and allow the manual entry of pay item numbers and description. It is recommended that you copy and paste from the DQE so the data is correct and will quantify in reports.

Panel Custom Label Fields – This allows a designer to fill in any open fields on a sign panel. e.g.: the Speed Limit sign has one field that needs to be filled in. When the Speed Limit sign is selected Field 1 becomes active to enter the speed. This will change the preview display to show the new speed. If a sign is selected with more than one field in it the FDOT Signs tool will recognize this, and the appropriate number of fields will become active.

Pay Item – This will show a preview of the post cell used and the Pay Item information assigned.

Confirm Post – When selected the assembly is ready for placement and the tool moves to the placement process.

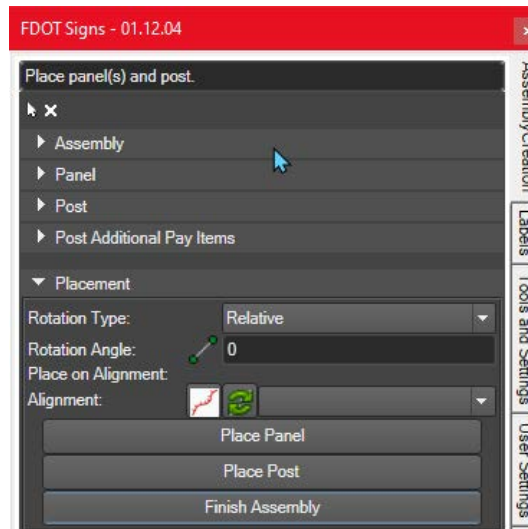
ASSEMBLY CREATION - POST ADDITIONAL PAY ITEMS



Post Additional Pay Items – This allows the designer to add multiple pay items to the post.

NOTE *If you are adding additional pay items to the post, do it as you are creating the assembly. If you decide to edit an already placed sign assembly to add an additional pay item number, the application will crash.*

ASSEMBLY CREATION – PLACEMENT



Rotation Type and Angle – There are two options for Rotation, Relative and Absolute, Relative allows the assembly to be rotated parallel to the roadway alignment and the flow of traffic, for this reason it is the default. Absolute allows the designer to enter in a fixed rotation angle.

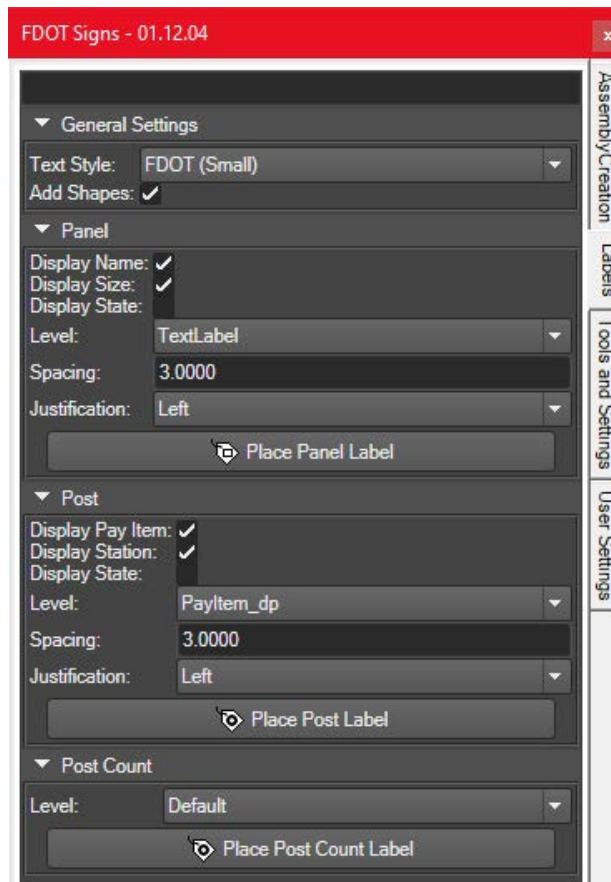
Alignment – There are two methods to select the alignment, you can pick an alignment from file, or you can use the alignment pulldown to select from a list of available alignments in the design file.

Place Panel – Starts the process of placing the assembly starting with the panel first.

Place Post – Starts the process of placing the post to go with the previously placed panel.

Finish Assembly – Once the assembly is placed this must be selected before moving on to the Label options.

LABELS



LABELS – GENERAL SETTINGS

Text Style – Controls which font is used for the labels; change the style to **FDOT Small**.

Add Shapes – When toggled on, the Pay Item Number Label has a Rectangle shape, and the Sign panel name has an oval shape.

LABELS – PANEL

Display Name – Controls if the Panel name is part of the label or not.

Display Size – Controls if the Size of the panel is part of the label or not.

Display State – Controls if the state is labeled, default is **Proposed**. If toggled on the **Existing to Remain** or **To Be Relocated** state will be part of the label.

Spacing – Controls the spacing between lines of text in the label. A higher number equals bigger space, smaller number moves text closer together. You may need to adjust the sizes, so the shapes won't be on top of your text.

Level – Provides a level override if needed, the default is **TextLabel** for Panel labels.

Place Panel Label – Executes the place panel label command, designer picks the panel to label and then the location of the label.

LABELS - POST

Display Pay Item – Controls if the Post label contains the Pay Item Number in the label.

Display Station – Controls if the Station location is part of the label or not.

Display State - Controls if the state is labeled, default is **Proposed**. If toggled on the **Existing to Remain** or **To Be Relocated** state will be part of the label.

Level - Provides a level override if needed, the default is **PayItem_dp** for Post labels.

Spacing – Controls the spacing between lines of text in the label. A higher number equals bigger space, smaller number moves text closer together. You may need to adjust the sizes, so the shapes won't be on top of your text.

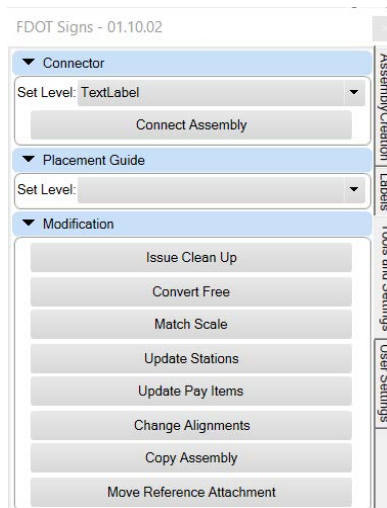
Place Post Label - Executes the place post label command, designer picks the post to label and then the location of the label.

LABELS - POST COUNT

Level – Provides the level that the additional assembly count will reside on, default is **TextLabel**.

Place Post Count Label – Command used to place label that denotes assembly count.

TOOLS AND SETTINGS



TOOLS & SETTINGS – CONNECTOR

Set Level – The default level of the connector line is **TextLabel** but can be changed by use of the pull-down menu.

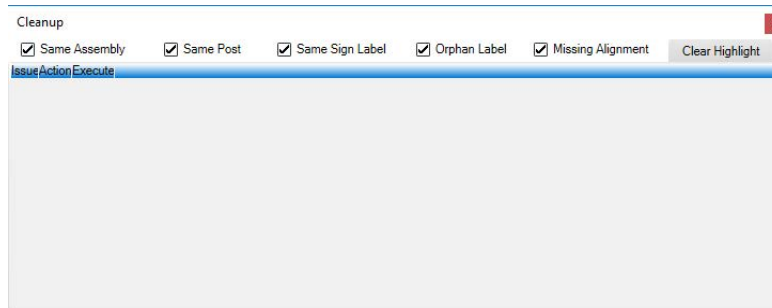
Connect Assembly – The connector line is the leader line between the post and panel and will dynamically stay connected if panel or post is moved. If the design file has assemblies that are not connected the designer can use this command to add them after they are placed.

TOOLS & SETTINGS – PLACEMENT GUIDE

Set Level – Designer can change the level of the temporary placement guide when placing assemblies.

TOOLS & SETTINGS – MODIFICATION

Issue Cleanup – Allows designer to delete unused sign assembly data from drawing file. Each cleanup option can be controlled with a check toggle.



Same Assembly – Deletes duplicate named assemblies.

Same Post – This will delete duplicate sign labels that are in the file.

Same Sign Label – This will delete duplicate sign labels that are in the file.

Orphan Label – If an assembly has been deleted and the label somehow remains, this will delete the label that is not associated to any assembly.

Missing Alignment – If an alignment that has Sign Assemblies associated to it is deleted, this will delete all signs that are still associated to the deleted alignment.

Clear Highlight – When the list is populated with scan results of selected criteria, this is used to clear the list which will remove the data from the file.

X – This closes the Cleanup tool.

Convert Free – Converts already placed assemblies to a free state which has no association to an alignment.

Match Scale – Common scale for a FDOT design file is 1" =40', but in cases where the scale is different Match Scale will adjust the assembly sizes of cells in the file for better visibility.

Update Stations – The designer can update the station of the assembly if it has been moved or copied. The labels are dynamic and will update on their own, but this command will force the station to update.

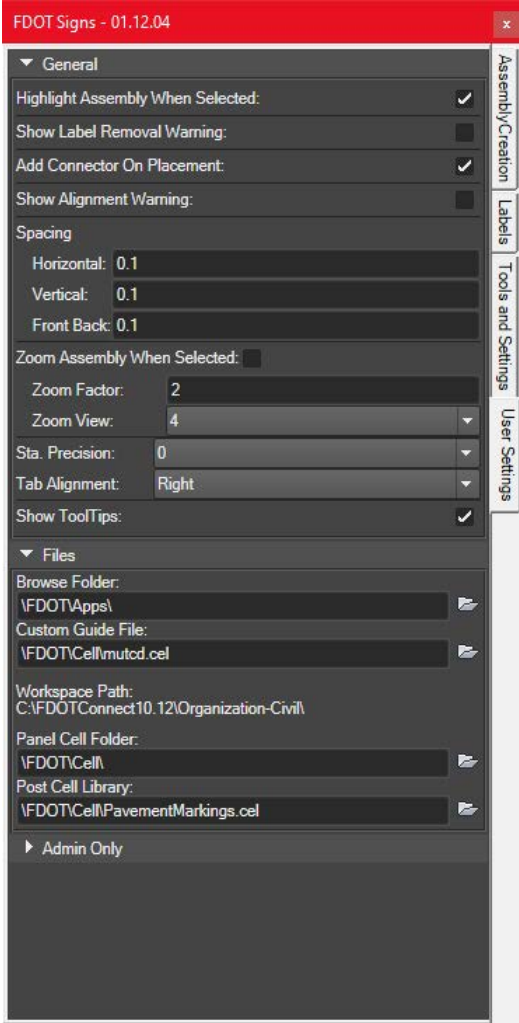
Update Pay Items – Allows designers to update pay item numbers in the event the currently assigned ones are incorrect.

Change Alignments – Allows the designer to reassociate a moved or copied assembly to a new alignment.

Copy Assembly – Allows designer to pick an assembly as a group with one click to copy.

Move Reference Attachment – Allows designer to move assemblies placed in a reference.

USER SETTINGS



DESIGNER SETTINGS – GENERAL

Highlight Assembly When Selected – Controls when an already placed assembly is selected from the assembly pull down list is highlighted or not.

Show Label Removal Warning – When relabeling an already placed assembly, when toggled on a warning will display telling you that you are about to delete and relabel an assembly.

Add Connector on Placement – When toggled on it will automatically place the connector line as the assemblies are placed.

Show Alignment Warning – When toggled on it will warn the designer if they are about to change alignment association.

Spacing

Horizontal – Controls spacing of multiple panels in plan view from left to right.

Vertical – Controls spacing of multiple panels in plan view from top to bottom.

Front Back – Controls spacing of multiple panels in plan view of double-sided assemblies.

Zoom Assembly When Selected – When toggled on it will zoom to the selected assembly from the list.

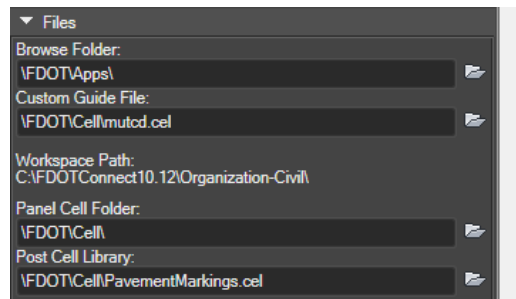
Zoom Factor – Controls how far the selected assembly is zoomed in.

Zoom View – Uses Model 4 to show the zoomed in assembly.

Station Precision – Controls how many decimal places are displayed in the station label, default is set to 0 to match FDOT standards.

Tab Alignment – The designer can change the side of the dialog box that displays the tabs. The options are along the top or along the right side.

USER SETTINGS – FILES



NOTE *The pathing is now set upon installation to the install location. This was an issue before, when a network server installation was executed. The designer will need read/write permissions to the installation locations for the sign tool to work properly.*

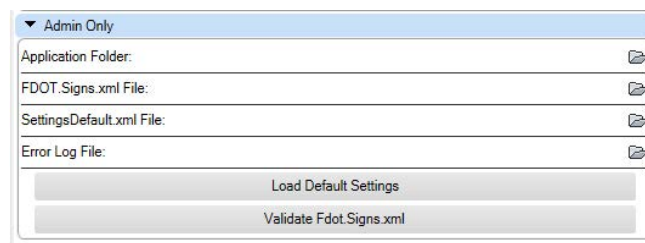
Browse Folder – The browse folder is where you save and/or recall sign assemblies. The designer should change this location to point to the sign assembly folder within the ORD install which contains already created assemblies.

Custom Guide File – This location is where your cells reside in the guide sign file you have created for your project, this location will constantly change as you work through a design. It is not important where the default location is pointed.

Panel Cell Folder – This points to the root folder cell library location that contains all the required sign panels that you will use in your project design. The new version will automatically set this upon installation.

Post Cell Library – This points to the cell library location that contains all the required post cells you will use in the design. The new version will automatically set this upon installation.

USER SETTINGS – ADMIN ONLY



Application Folder - Opens the location of the FDOT Signs folder within the ORD Installation location.

FDOT.Signs.xml File – Opens the *FDOT.Signs.xml* file for editing. It is recommended that the designer not edit this file.

Settings Default.xml File – This file should already be set; however, the designer can change this file and then Select the Load Default Settings to load settings into the application.

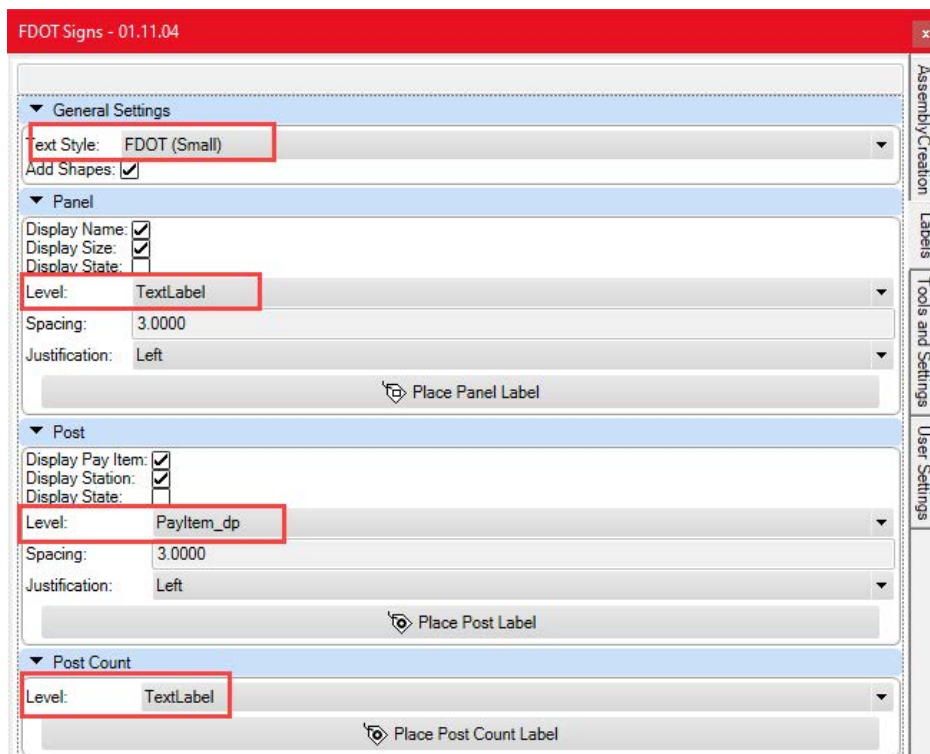
Error Log File – When selected this will open the Error Log File to determine what error has occurred that can then be passed to the CADD office for the developer to evaluate.

Load Default Settings – This loads the *Settings.Default.xml* File discussed above.

Validate FDOT.Signs.xml – This will validate the cells and cell files that are necessary for the Sign Tool to function correctly. It will report what is missing.

NOTE *The issue of not seeing a preview of your panels or posts while you are building your assembly can be resolved by uninstalling the FDOT ORD State kit and Bentley Connect, then Reinstalling in Reverse Order.*

Before moving onto the exercises make sure you have the Text Style and all your levels set correctly. The image below shows the location and what the levels should be set to. In some cases, it was noticed that if the levels are not set the sign app will crash on assembly placement. The designer has the option to change the Text Style to a more aesthetic size. FDOT Small and FDOT Medium is the most used.



FDOT Signs - 01.11.04

▼ Connector

Set Level: TextLabel

Connect Assembly

▼ Placement Guide

Set Level: TextLabel

▼ Modification

- Issue Clean Up
- Convert Free
- Match Scale
- Update Stations
- Update Pay Items
- Change Alignments
- Copy Assembly
- Move Reference Attachment


Assembly/Creation Labels Tools and Settings User Settings

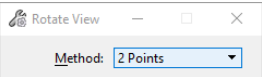
EXERCISE OVERVIEW

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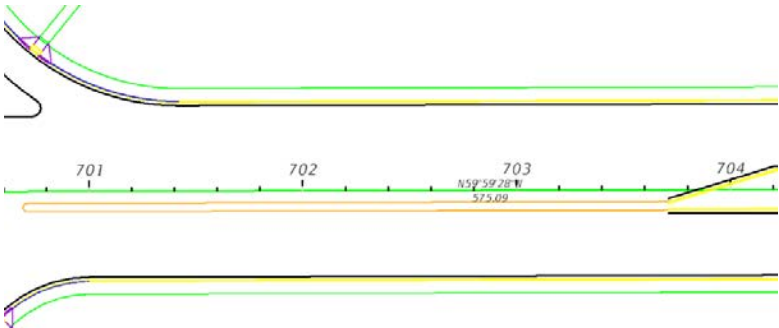
EXERCISE 2.1 Place Single Panel Sign Assembly

In this exercise, the designer will build, place, and label a simple sign assembly. The Sign tool is designed so the designer works top to bottom making selections. If you skip around instead of top to bottom the application will crash.

1. Open the *DSGNP01.dgn* file located in the **SigningAndMarking** Folder and zoom in near *Station 702+80*.
2. If your file does not match image below, select the Rotate View  button select the **2 Points** command and using the SR61Alignment as the object select anywhere near station 701+00 for the




first point and anywhere near station 702+00 for the second point. The drawing should look like below.



3. From the **FDOT Ribbon**, select the **FDOT Signs** icon to open the application.



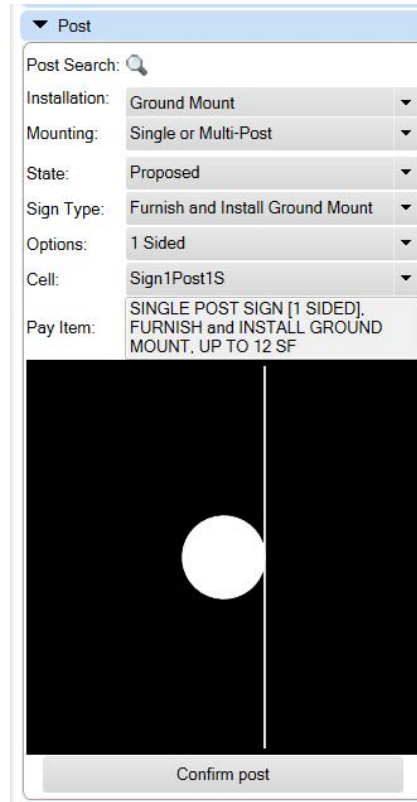
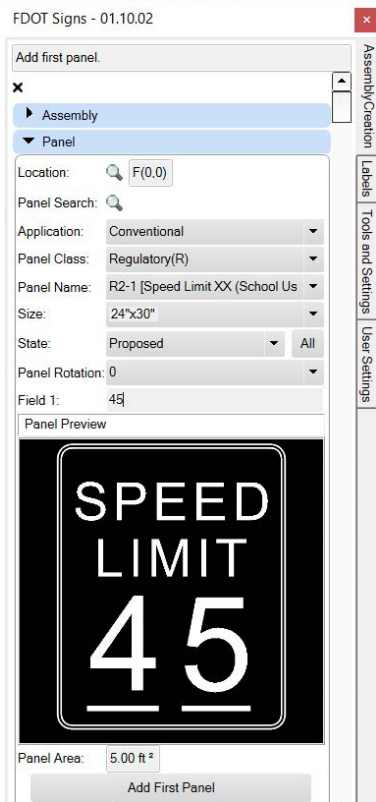
4. From FDOT Signs, select the Create New Assembly  icon.
5. For *Name* enter **R2-1**, notice the name has added -001 to the end.
6. Set *Justify* to **Center**.
7. Make sure **Panel** and **Post** are selected, then select **Confirm Assembly Settings**.



8. If you click on the *Location* icon, you will notice grid **F (0,0)** will be the *Panel* location. Yellow denotes where the current panel will be located on the grid, green denotes a grid space that already has a panel. To close the grid view, just left click anywhere outside of the limits.

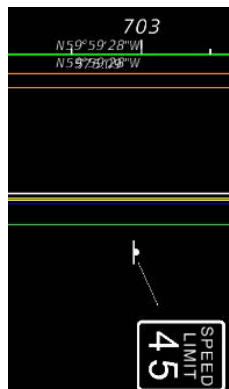


9. In the *Panel Section*:
 - a. Set the *Application* to **Conventional**.
 - b. Set *Panel Class* to **Regulatory (R)**
 - c. For *Panel Name* Select the **R2-1** (Speed Limit)
 - d. *Size* has two preset sizes, select **24"x30"**.
 - e. Set *State* to **Proposed**.
 - f. For *Field 1* type in **45** the panel preview shows the text.
 - g. Click **Add First Panel**.

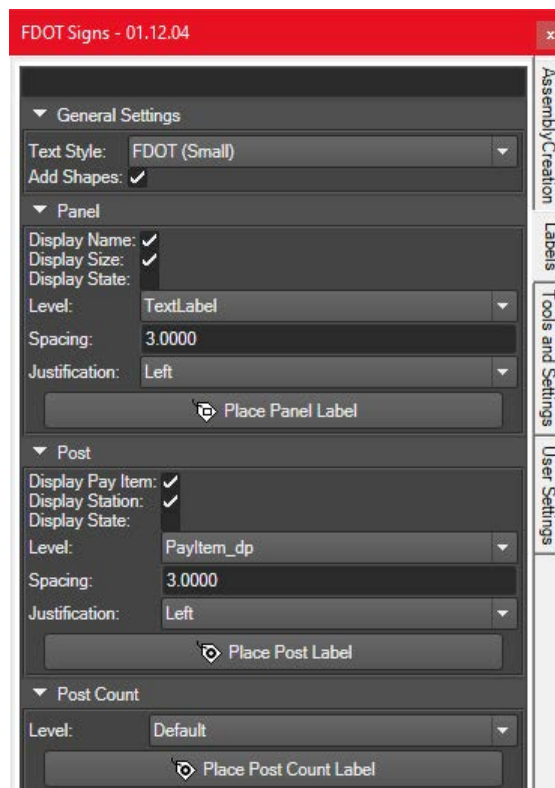


10. Select **Confirm Assembly**.
11. The *Post Parameters* automatically populates with data based on the panel entries. You can make any changes to the default parameters if needed.
 - a. Click on Confirm Post to continue to the Placement section.
12. Select **Place Panel** to start the *panel placement command*.
13. Since you have already selected the alignment to place the assembly on the cursor has a preview of the panel attached and is ready for final placement, select an area in the drawing on the south side of the alignment away from the sidewalk to allow room for labels and connector line. Left click to place panel.
14. Select **Place Post**, notice how the app remembers the Alignment and is ready to place the post. Notice the feedback of station and offset as you drag the cursor. Left click to place the Post at Station **702+90**.
15. Select **Finish Assembly** to proceed to the **Labels** tab.

The drawing should look like below.



16. Select the **Labels** tab and make sure to match the following settings as shown below.




17. Click **Place Panel Label**, click anywhere on the panel and left click to the right of the assembly.

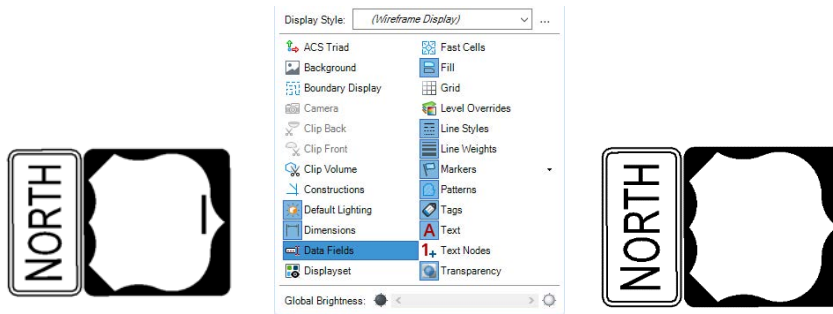
18. Click **Place Post Label**, click the *post*, for *label location* pick below the previous label. Your drawing should look like below.



NOTE *Label placement is a personal preference. Be consistent with how you place sign labels, so the plans look professional. Use MicroStation commands to move the Sign Names and Sizes so they are centered under the sign panels and are stacked from top to bottom.*

When the panels are placed you may see the data fields still be visible along with the desired text, to cut off the data fields use the view attribute pulldown and toggle off **Data Fields**. 

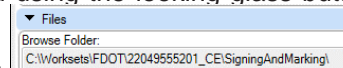
HINT *Once you select label panel you will remain in panel label command until you switch to post labels, meaning you don't have to keep pressing the label panel command to label multiple paneled assemblies.*



EXERCISE 2.2 Saving the Sign Assembly

In this exercise, the designer will save the previously placed sign assembly as an xml file, so that it can be recalled, placed, and labeled in a future session. For this exercise you will be saving assemblies to the SigningAndMarking folder in the dataset folder.

1. Switch to the Designer Settings tab on the Sign tool and using the looking glass button change the folder used for saving and recalling assemblies as shown.



2. Switch back to the **Assembly Creation** tab and select the **Save** icon.
3. The save as dialog box opens already in the folder you just set, Name the assembly **R2-1**. The file is converted to an xml file.
4. Press **Ok** to save and close the dialog.



EXERCISE 2.3 Update Signpost Location

In this exercise, the designer will move the post location of an already placed assembly several feet to review the dynamic station update.

1. Continuing in the *DSGNP01.dgn*.
2. Zoom to the location of the previously placed assembly.
3. Select the post and **Right Click** and select **Move**, then move the post a few feet in either direction.
4. Notice that when you click to place the post the station value automatically updates along with the connector that keeps the attachment between the post and panel. If the station does not update you may need to re label the post.

EXERCISE 2.4 Place Multi-Panel Sign Assembly

In this exercise, the designer will use the same process as in the previous exercise to assemble and place a four-panel sign assembly on the North side of the roadway.

1. Continuing in *DSGNP01.dgn*, zoom to the vicinity of **Station 703+00**. This sign will be added on the North side.
2. Open the Sign tool, if closed, select **Start New Assembly**.
3. Name the new assembly **M1-4Panel** and select **Confirm Assembly Settings**.
4. In the *Panel Section*, make selections for **Panel 1 of 4** as shown below.

Panel

Location: F(0,0)

Panel Search:

Application: Conventional

Panel Class: Route Markers(M)

Panel Name: M01-4 (2 digits) [U.S. Route Sign (2 digits)]

Size: 24"x24"

State: Proposed All

Panel Rotation: 0

Field 1: 98

5. Select **Add Panel**.
6. Make the following selections for **Panel 2 of 4**.

Panel Search:

Application: Conventional

Panel Class: Route Markers(M)

Panel Name: M01-4B (3 digits) [U.S. Route Sign (3 digits)]

Size: 30"x24"

State: Proposed All

Field 1: 319

7. Select **Add Next Panel**.
8. Click on the Location icon and select the location that is marked yellow in the diagram below, notice the used locations are green.

Panel

Location: F(1,0)

Panel Search:

Application: F(0,0) F(0,1) F(0,2)

Panel Class:

Panel Name: F(1,0) F(1,1) F(1,2)

Size:

9. Make the following selections for **Panel 3 of 4**.

Panel

Location: F(1,0)

Panel Search:

Application: Conventional

Panel Class: Route Markers(M)

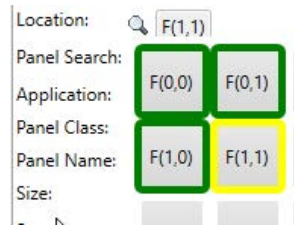
Panel Name: M6-04 [Directional Arrow - Left / Right C

Size: 21"x15"

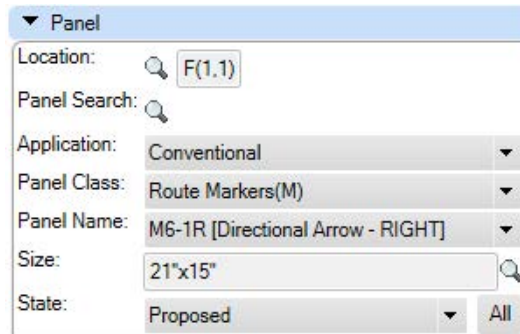
State: Proposed All

10. Select **Add Next Panel**.

11. Click on the Location icon and select the location that is marked yellow in the diagram below.



12. Make the following selections for **Panel 4 of 4**.



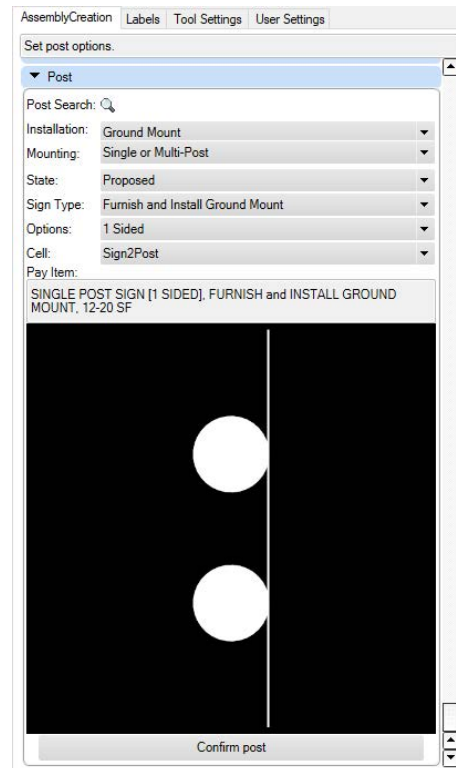
13. Select **Add Next Panel**.

14. Notice the preview of the assembly and how the Panel Area is at zero, but the Total Area is **13.38sf** this is the total area of all four panels.



15. Select **Confirm Assembly**.

16. In the *Post* section make the following selections.



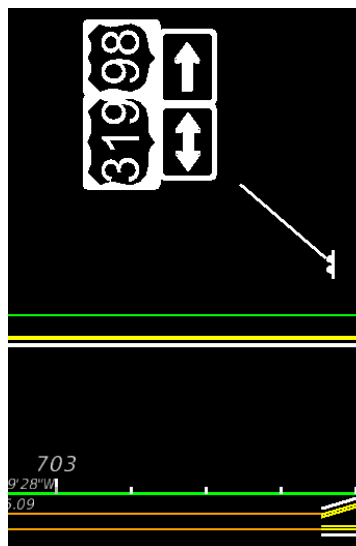
Notice the Pay Item information is different from the previous assembly you placed. This is because of the additional square footage of the panels. This is automatic and controlled by the signs.xml file, so the designer will not have to make the selection. This data is placed on the post when placed.

17. Select **Confirm Post**.

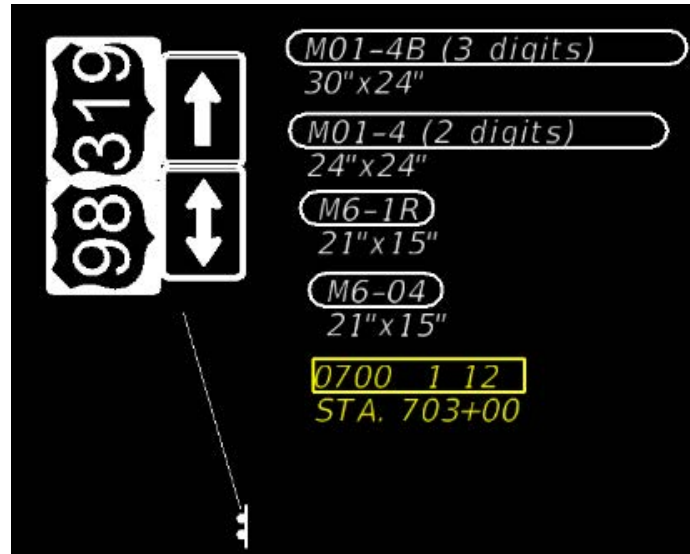
18. Select **Place Panel**.

19. Make sure *Rotation* is set to **Relative** and the correct alignment is selected.

20. Select **Place Panel** and click near Station **703** as shown below.



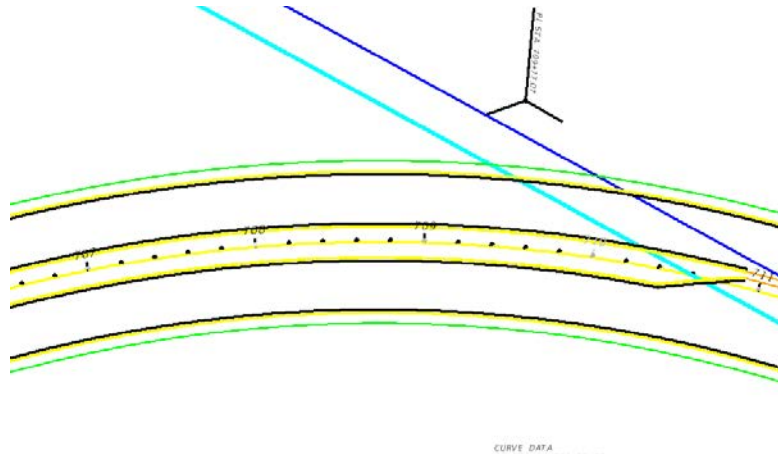
21. Select **Place Post** and Select close to Station **703+00** just outside the Sidewalk.
22. Click **Finish Assembly**, then select the **Labels** tab.
23. Select **Place Panel Label**, select one panel at a time and place the label. You do not need to select the Place Panel Label again, due to the command is always active until you change to the post label.
24. Select **Place Post Label** and select below the previously placed labels. The completed assembly is shown below.



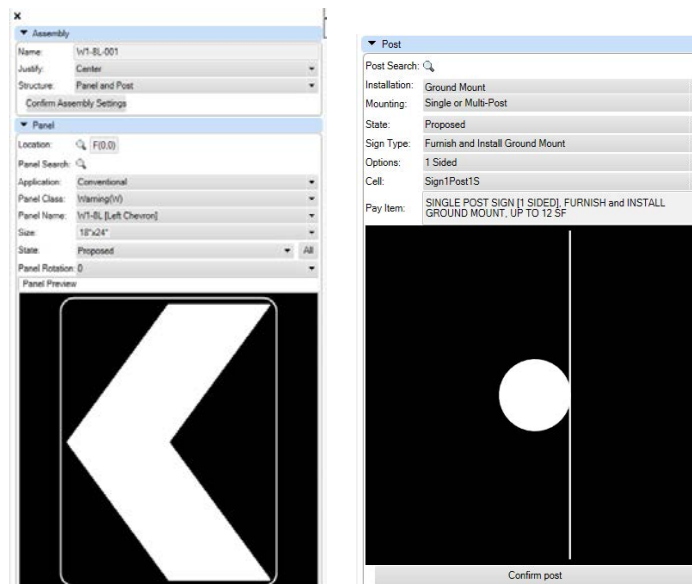
EXERCISE 2.5 Creating and Placing a Sign Assembly using 3 methods (Part 1)

In this exercise, the designer will create and place a warning arrow sign assembly three times using different techniques. The designer will first place the assembly according to previous steps, then the designer will recall a previously saved version and the final method will be to copy one of the assemblies to a new location.

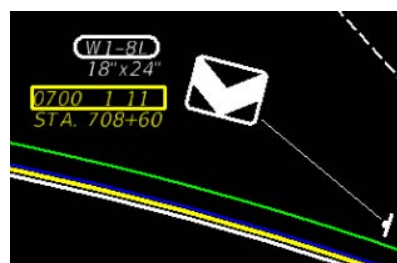
1. Continuing in the *DSGNP01.dgn* switch to the FDOT Ribbon and select the **2 Point Twist** command.
2. Rotate and zoom to the area as shown below.




3. Open **FDOT Signs** if not already open. Create the following assembly using the steps from earlier exercises.



4. Place the panel and post around Station **708+60** and label the panel and post as shown below.

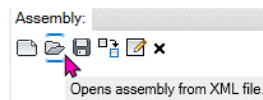


5. On the Sign Tool switch to the Assembly Creation tab.
6. Click on the save assembly button .
7. Name the assembly **W1-8L** & press **Save**.

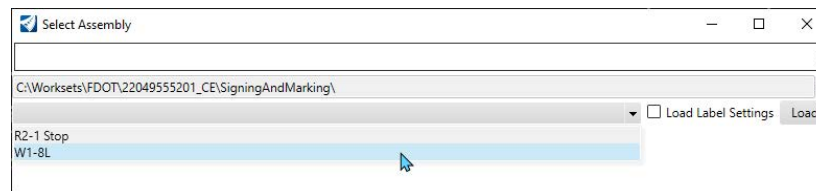
EXERCISE 2.6 *Placing same sign assembly using a saved xml file (Part 2)*

In this exercise, the designer will open a saved sign assembly and place it in the design file.

1. Continue working in the *DSGNSP01.dgn* file.
2. Close the Sign tool if open.
3. Reopen the sign tool.
4. Click on **Opens assembly from XML file** button in the FDOT Signs app.



5. Using the list pulldown select the **W1 8L** assembly. A preview is shown to verify the selection.



6. Select **Load**.
7. To save you time, the sign tool pre-loads all settings based on how it was saved. If no changes are needed select **Confirm Assembly** and then **Confirm Post**.
8. **Place** the Panel & Post. The post should be placed around station **709+60**.
9. Select **Finish Assembly**.
10. Switch to the **Labels Tab** on the sign tool.
11. Label **Panel** and **Post**.

EXERCISE 2.7 (Part 3)

In this exercise, the designer will copy the previously placed assembly and place it along the curve. The labels will update the station and name.

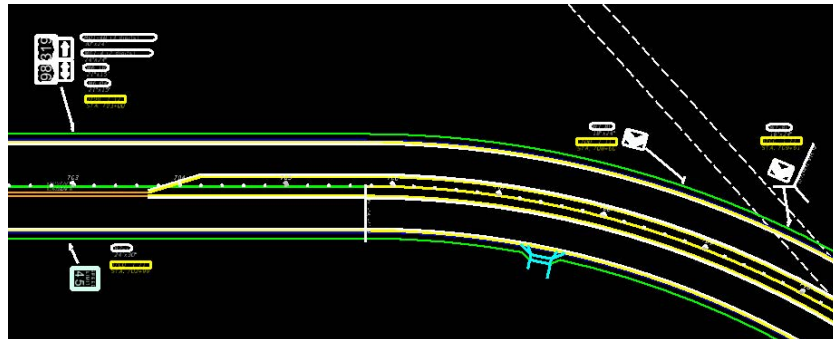
1. Continue working in the *DSGNP01.dgn* file.
2. Copy the previously placed assembly including labels using the **Copy Assembly** located on the **Tools and Settings** tab.
3. Place it around Station **710+50**.
4. Notice how the post rotates relative to the alignment and the station label updates. If the station does not update you can re label the post.



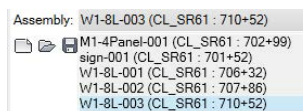
EXERCISE 2.8 Reviewing the Sign Assembly Inventory in the Design File

In this exercise, the designer will open the sign tool while the *DSGNP01.dgn* is open to get familiar with navigating around the already placed assemblies in the file. This exercise will show the importance of proper naming conventions for assemblies.

The drawing should contain 4 Sign assemblies if you have followed the previous exercises.

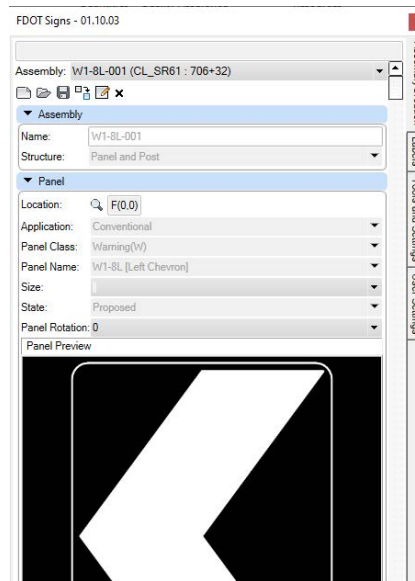


1. Continue working in the *DSGNP01.dgn* file.
2. Close and reopen the Sign tool.
3. Click on the Assembly pulldown list.



4. The list contains the 5 placed assemblies, naming is important due to the number of assemblies a project could contain. The information also includes Alignment name and Station of the assemblies for easy location in the design file. Notice the three W1 8L assemblies in the list. The difference in the name is the 3-digit number, this will allow you to have unlimited assemblies of the same name.

- From the assembly list select the **W1 8L-001** sign.
- Two things occur, the selected assembly is highlighted in the file and the sign tool dialog has populated with the settings of the assembly. Notice the criteria is grayed out and not editable.



- If desired, you can edit the assembly criteria by pressing the Edit Assembly button to unlock the criteria.

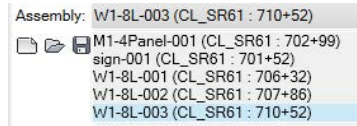


NOTE When re-labeling an assembly, a warning message alerts you that you are about to delete an existing label and replace it with the new label, select ok to replace the label.

EXERCISE 2.9 Editing an Existing Assembly (Part 1)

In this exercise the designer will edit a panel size on an assembly that was placed in a previous exercise.

1. Continue working in the *DSGNSP01.dgn* file.
2. Open the sign tool if not already open.
3. Pull down the sign list and select the **R2-1** assembly.



4. Select the Edit assembly icon.



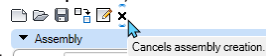
5. Select the size button and pick the **30"x36"**.



6. Select **Confirm Assembly**.
7. Select **Place Panel** to replace the old panel with the new one, notice the panel label is removed. The post can remain with its current label.
8. Select **Finish Assembly**.
9. Switch to the **Labels** tab and select **Place Panel Label**. You should now have a new label with the larger size.



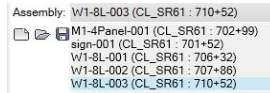
10. When edits are complete, switch to the **Assembly Creation** tab and select the **X** button to end the editing session.



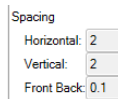
EXERCISE 2.10 Editing an Existing Assembly (Part 2)

In this exercise the designer will adjust the spacing between panels in the design file.

1. Continue working in the 5file.
2. Open the sign tool if not already open.
3. On the sign pull down list select the **M1-4Panel-001** assembly.



4. Select the **Edit Current Assembly** button.
5. Switch to the **User Settings** tab.
6. Change the spacing to **2**.



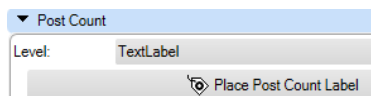
7. Switch back to the **Assembly Creation** tab and select **Confirm Assembly**.
8. Select **Place Panel** and replace the panel in the design file like you have done before.
9. The panels spacing should match the image below.



EXERCISE 2.11 Labeling Assembly Count

In this exercise the designer will add an assembly count total to an assembly that was previously placed in an earlier exercise.

1. Continue working in the *DSGNSP01.dgn* file.
2. Open the sign tool if not already open.
3. We will be working with the assembly from the previous exercise. Switch to the **Labels** tab.
4. Click on the **Place Post Count Label**, make sure the level is set to TextLabel.



5. The command line is asking for you to select panel > **select** the Speed Limit panel.

6. A preview of the text is visible with a placement guide. **Left click** under the post label for placement.

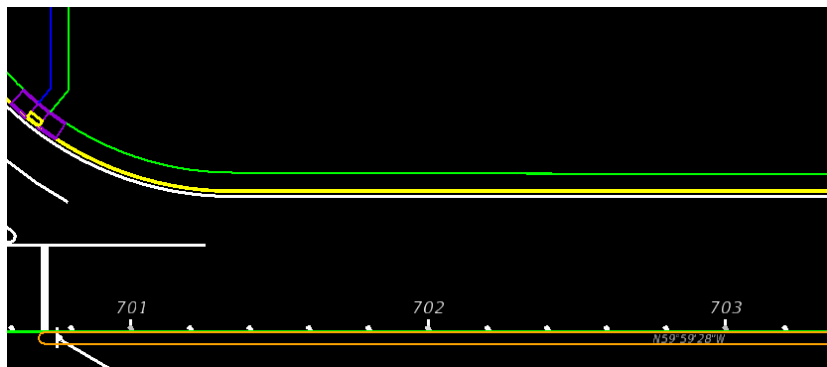


7. The designer also has an option to edit the text label.

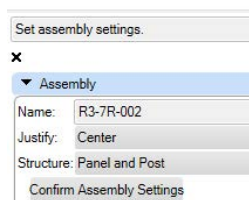
EXERCISE 2.12 *Placing the same Sign Assembly Twice (Part 1)*

In this exercise the designer will place a Sign Assembly twice using the normal way to build and place and the create copy from current assembly button on the sign tool to place it a second way. The design requires two of the same assemblies near the intersection.

1. Continue working in the *DSGNP01.dgn* file.
2. Zoom to the area shown below.



3. Using what you have learned start a new assembly and name it **R3-7R** and press tab, so the 3-digit number appears.

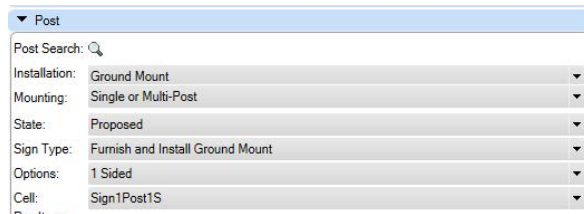


4. Select **Confirm Assembly Settings** to continue.

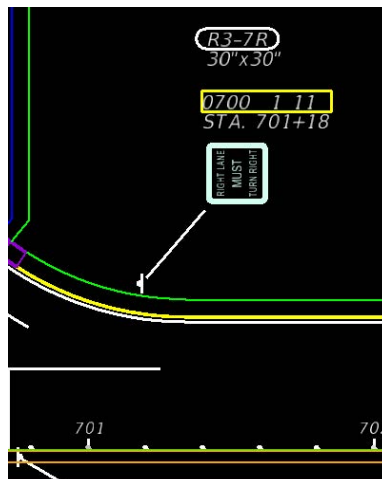
- Fill in Panel section as image shows below.



- Select **Add First Panel** and then **Confirm Assembly**.
- In the Post section match image below.



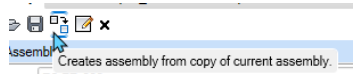
- Select **Confirm Post** to continue.
- Place **Panel** and then **Post** close to Station **701+18** on the Left side.
- Select **Finish Assembly** and then **Label** Panel & Post. Drawing should look like the image below.



Now we will utilize the Create Assembly from Copy to save time placing the second assembly.

11. Switch back to the **Assembly Creation** tab.

12. Select the **assembly from copy** button.

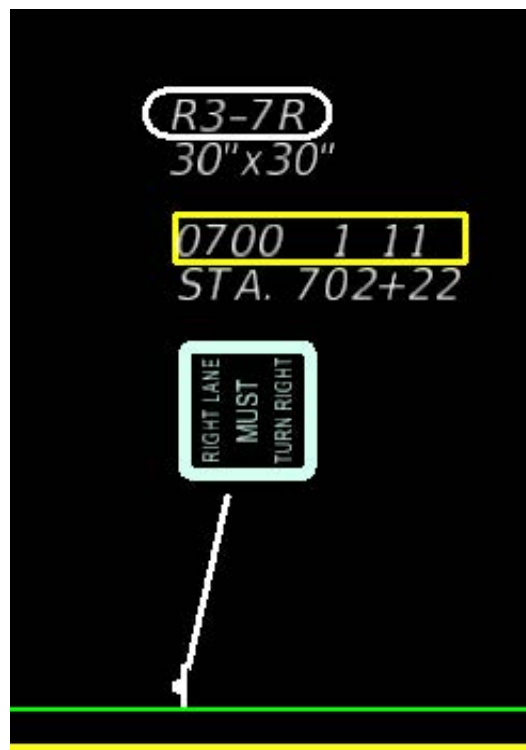


13. Notice how the parameter boxes are active now and will accept changes and the name is the same as the other assembly, but it gets the next number.

14. Nothing is changing in the panel section so click on **Confirm Assembly**.

15. Nothing is changing in the post section so click on **Confirm Post**.

16. **Place** and **Label** Assembly. See image below.

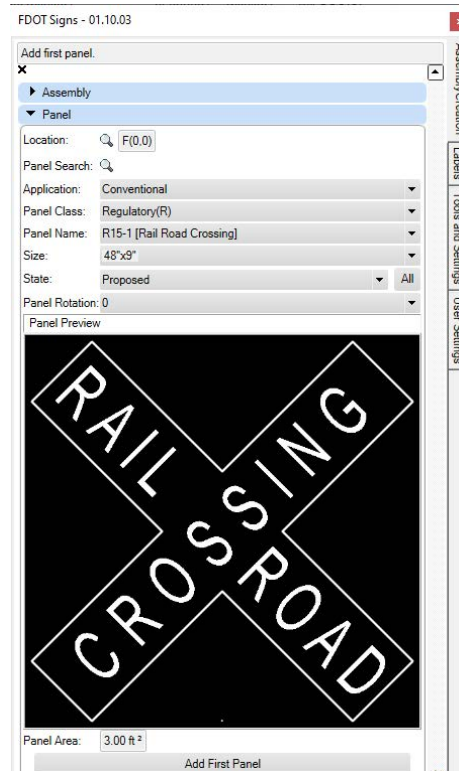


EXERCISE 2.13 Adding Additional Pay Items To Posts

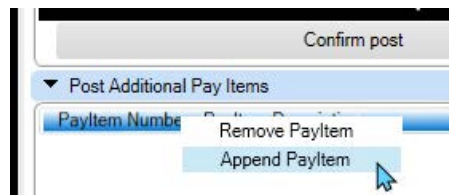
In this exercise the designer will place a Sign Assembly that contains multiple pay items attached to the post.

NOTE You must add additional pay item numbers when you are creating the sign assembly, editing an already placed sign assembly to add additional pay items will cause the sign tool to crash.

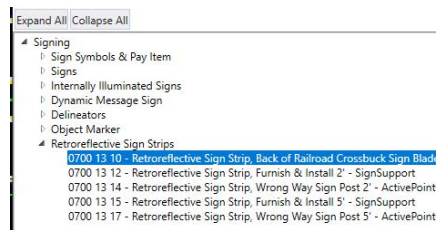
1. Continue working in the *DSGNSP01.dgn* file.
2. Start a new sign assembly.
3. Name it **Railroad** and match the image below



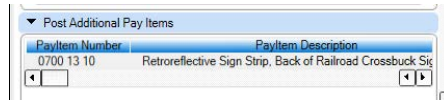
5. Select **Add First Panel**.
6. Select **Confirm Assembly**.
7. In the Post additional Pay Items **Right Click** on the PayItem Number and select **Append PayItem**



8. Select **Collapse All** and browse to the following.



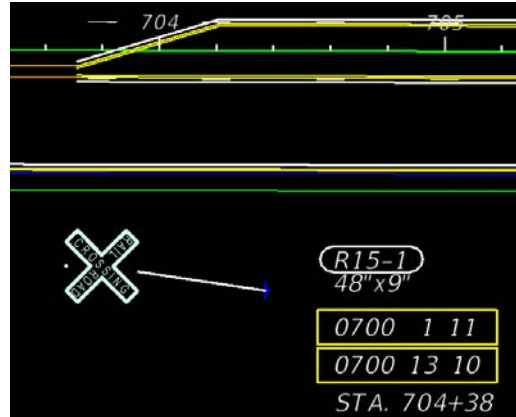
9. Select **OK**. Notice the list populates with the selection made from the database.



10. Select **Confirm Post**.

11. Place Panel and Post around Station **704+00** and select **Finish Assembly**.

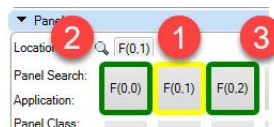
12. Label Assembly.



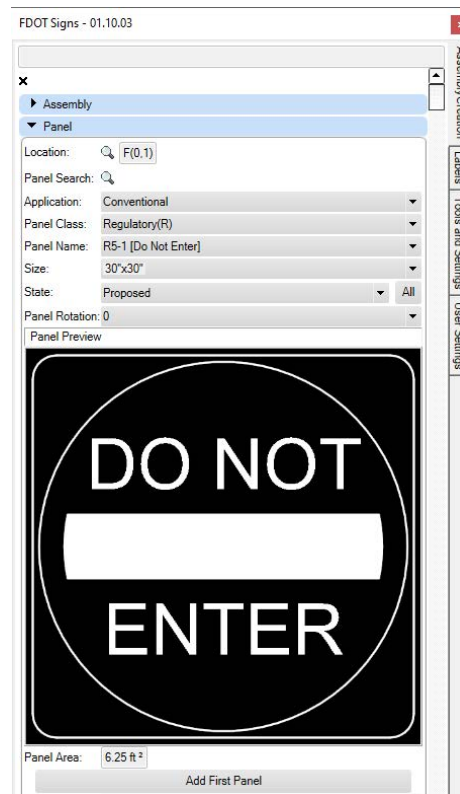
EXERCISE 2.14 Adding Rotated Panels to A Sign Assembly

In this exercise, the designer will build a sign assembly with rotated panels along a main panel.

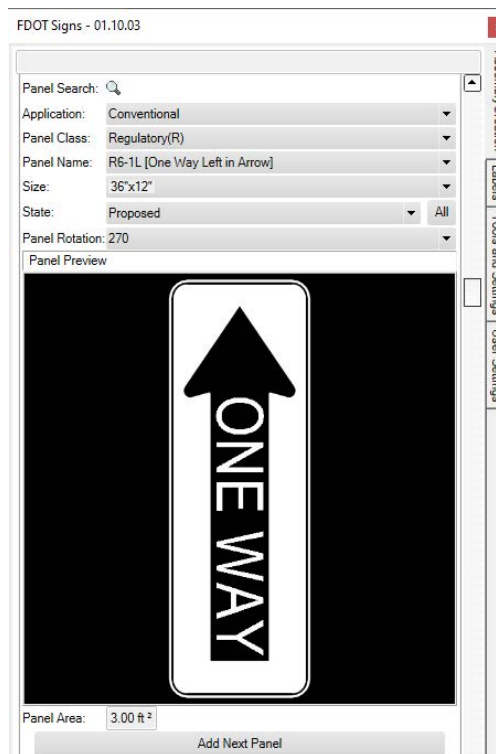
1. Continue working in the *DSGNSP01.dgn* file.
2. Start a New Assembly and name it **DoNotEnter**. Match image below for the first panel.
3. Use the Location Grid shown for the locations of the three panels.



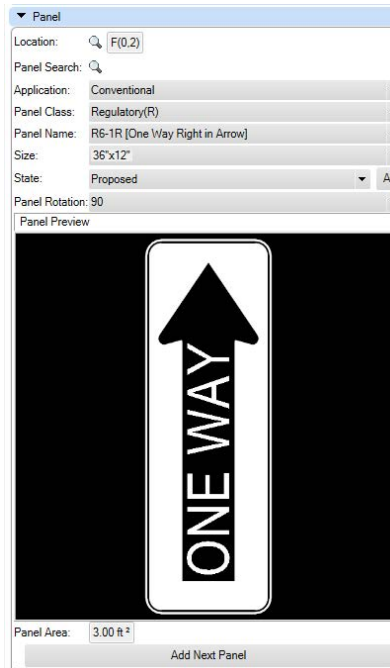
4. Select **Add First Panel**.



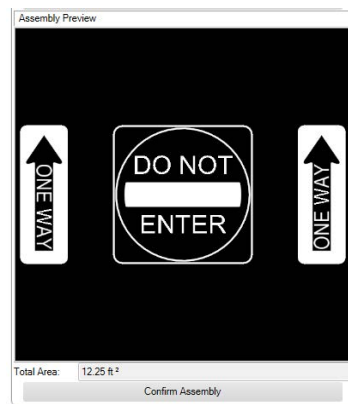
5. For the second panel make the following selections, then select **Add Next Panel**.



13. For the third panel make the following selections, and then select **Add Next Panel**.



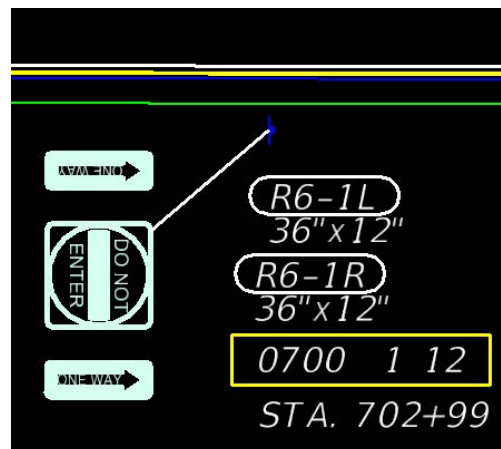
14. The preview should look like below. Select **Confirm Assembly**.



15. The post information auto populates and is correct. Select **Confirm Post**.

16. Make sure the alignment is still filled in and select **Place Panel** and then **Place Post**.

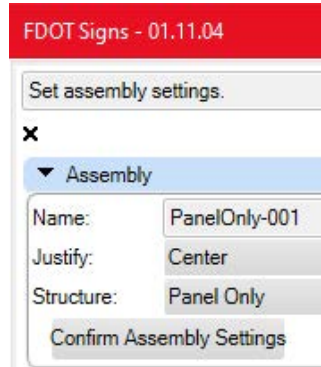
17. Select **Finish Assembly** and **Label Panels and Post**.



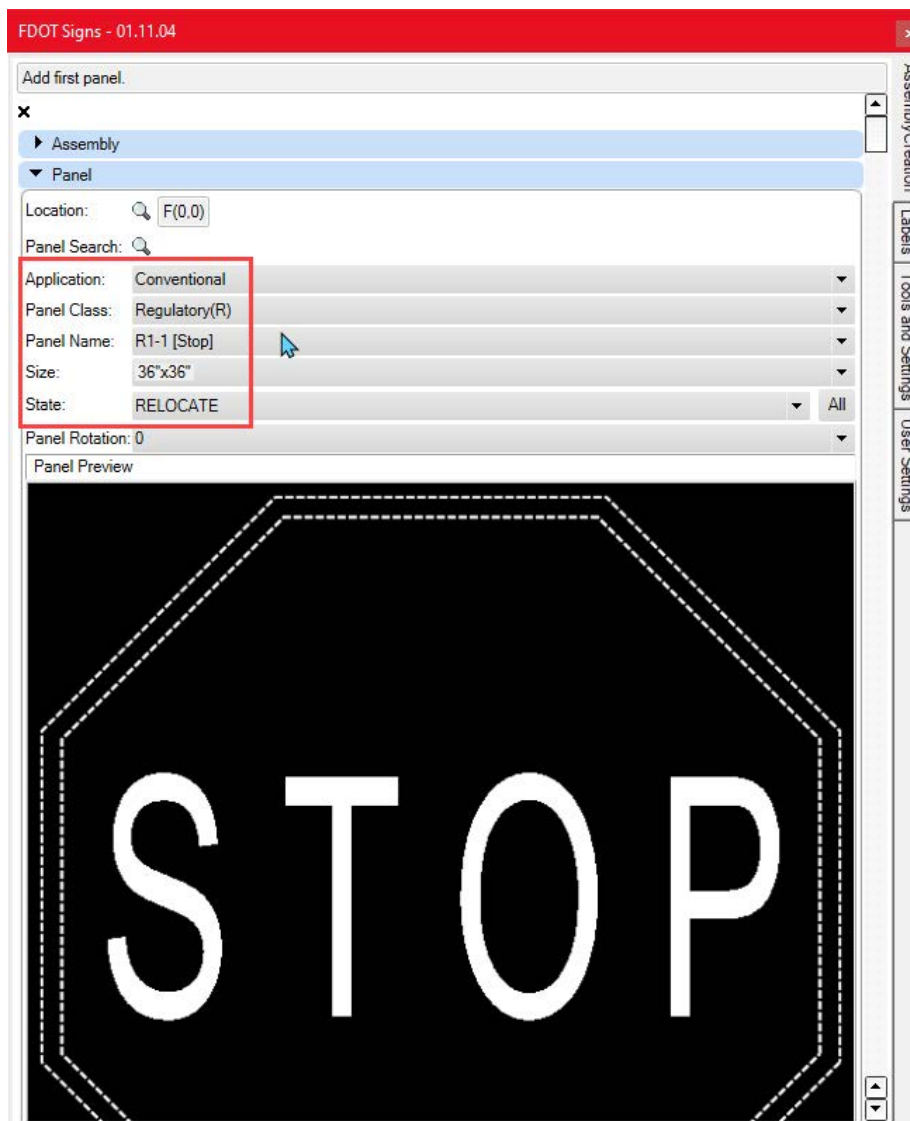
EXERCISE 2.15 Placing a Panel Only Option

In this exercise the designer will create and place a panel only option that will contain pay item information.

1. Continue working in the *DSGNSP01.dgn* file.
2. Start a New Assembly and name it **PanelOnly**. For Structure select **Panel Only**. Match image below for the first panel. Select **Confirm Assembly Settings**.



3. Make all selections from top to bottom as shown in the red box.

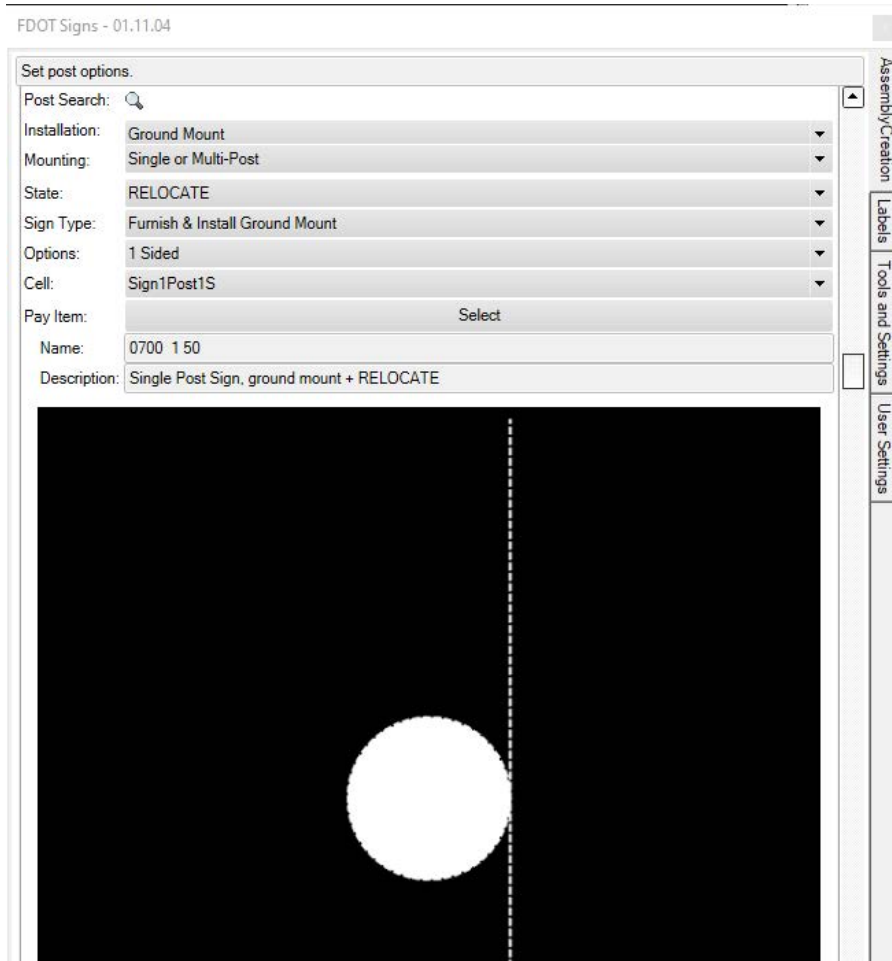


4. Select **Add First Panel**, then **Confirm Assembly**.

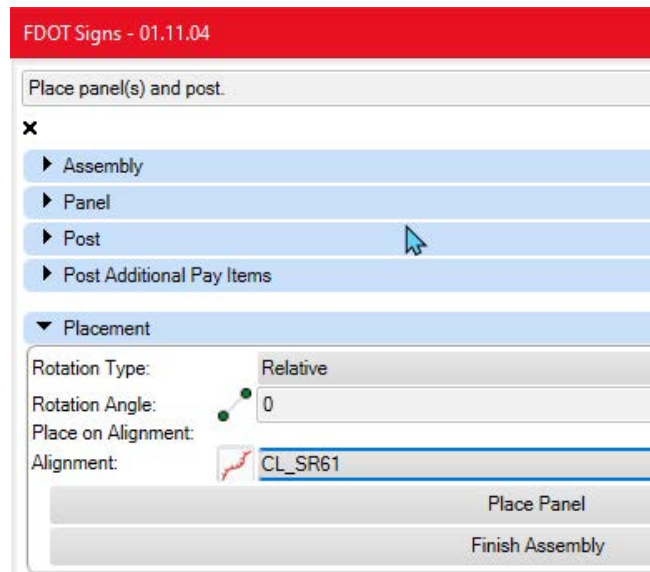
Notice the Post Options display even though there is no post to place, this is so the sign app can attach a pay item number that will be associated with this panel. You can also edit the pay item number that is shown.

5. Accept the default post options and select **Confirm Post**.
6. Make sure Rotation Type is set to **Relative** and Rotation Angle is set to **0**.

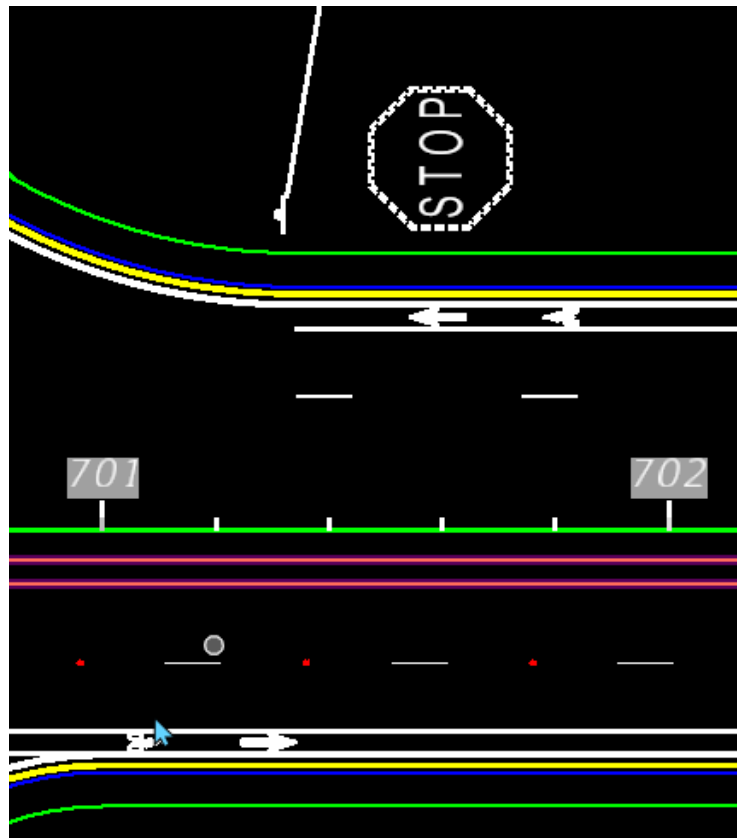
There may be a case where the Rotation Angle has a number displaying that is not 0, make sure if you are using a Relative Rotation Type that 0 is always displaying, this will prevent the app from getting confused on the angle of the panel at placement.



7. Make sure there is an Alignment selected and click **Place Panel**.



8. Select around Sta 701+50 for placement.



If you select the panel and look at properties, you will need to click on **Annotation Cell** to see the pay item data. The quantity report is shown below.

The screenshot shows a 'Properties' window with a tree view on the left and a properties table on the right. The tree view shows 'Elements (1)' containing 'Cell: PanelOnly-001', which has an 'Items' sub-item containing 'Annotation Cell'. The 'Annotation Cell' item is highlighted with a red box. The properties table below is also partially highlighted with a red box.

General	
Element Description	Annotation Cell
Cell Name	R01-01
Cell Type	Graphic
Class	Primary
Number of elements	3
Template	(None)
Annotation Purpose	True
Is Annotation	False

SignPanelIT	
PayItemNumber	0700 1 50
PayItemDescription	Single Post Sign, ground mount + RELOCAT
UnitOfMeasure	EA
AssemblyName	PanelOnly-001
DesignNotes	
ConstructionRemarks	
panelApplication	Conventional
PanelClass	Regulatory(R)
PanelName	R1-1
PanelDescription	[Stop]
PanelSize	36"x36"
State	RELOCATE
Front	True
Row	0
Column	0
PanelArea	7.46
Location	F(0,0)
PanelRotation	0.0000

Pay Item	Description	Unit	Quantity	Location	Station	Station	Station	Station
0700 1 12	Single Post Sign, E&L Ground Mount	AS	1		CL SR61	709+56.88	709+56.88	LT 8536
0700 1 50	Single Post Sign, Relocate	AS	1		CL SR61	703+68.84	703+68.84	LT 8437
0709 11131	Traffic Stripe-White Reactive Compo	GM	0.2345	0.465	CL SR61	700+71.00	713+29.25	RT 10992
0710 11101	Painted Pavement Markings, Standa	GM	0.2302	0.986	CL SR61	701+34.00	713+29.25	LT 11016
			0.0328		CL SR61	700+23.70	701+34.00	LT 10943
			0.0179		CL SR61	700+39.67	700+99.95	RT 10938
			0.2357		CL SR61	700+54.50	713+29.25	RT 10989

3

PAVEMENT MARKING TOOL

OBJECTIVE

The objective of this chapter is to create Proposed Pavement Marking Features using the Pavement Marking tool located on the FDOT Ribbon in ORD.

INTRODUCTION

This chapter demonstrates the Pavement Marking Tool that is used to create and place Striping Patterns in design files.

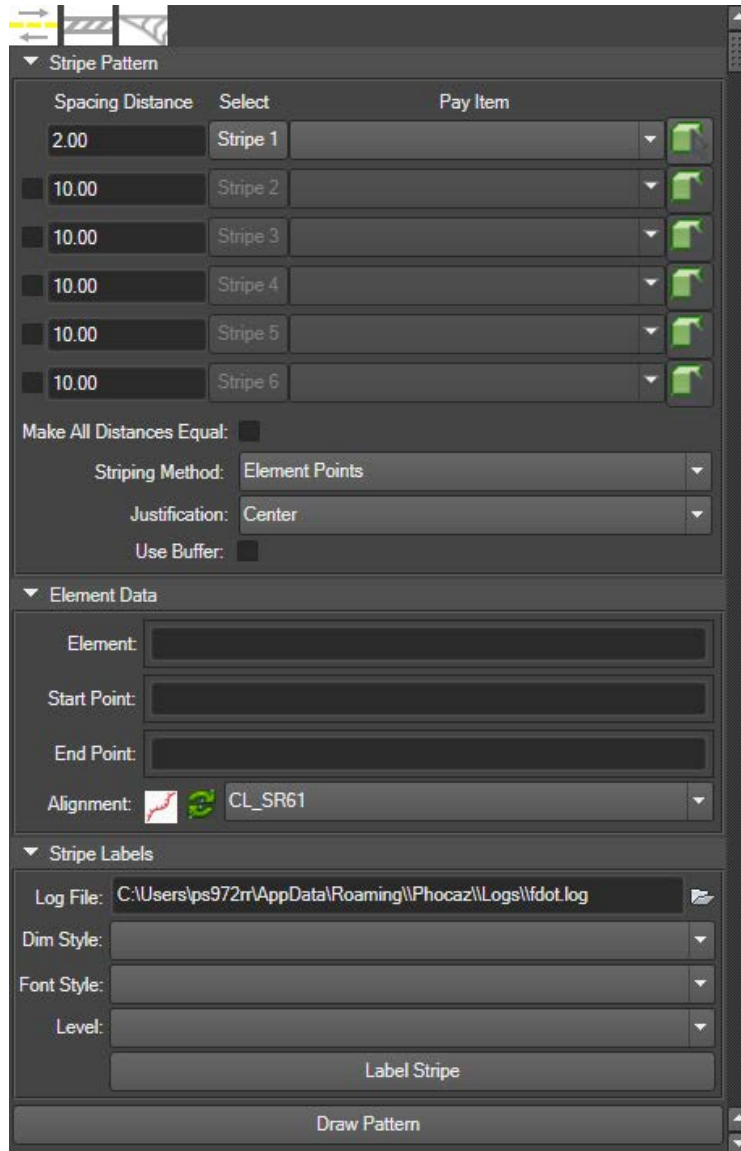
Pavement Marking Tool - An application within the FDOT WorkSpace that is used to draw Pavement Marking in accordance with the MUTCD and FDOT CADD standards.

Refer to the Design Standards indexes for details on Signing and Pavement Marking.

PAVEMENT MARKING TOOL



Many of the Traffic Plan items are simple 2d line styles drawn and have pay item information already placed for future Quantity Reports. To draw Pavement Markings with the tool, select the Pavement Marking icon on the Traffic Plans group on the FDOT Ribbon.



There are three modes in the Pavement Marking tool to aid in the design and layout of Patterns. *Striping*, *Separator*, & *Merge/Diverge Chevrons*.

STRIPING



The Pavement Marking tool places all solid or skip Pavement Markings. The striping tool can use an Alignment, or Line to offset for pattern placement.

STRIPE PATTERN

The screenshot shows the 'Stripe Pattern' configuration window in a software application. The window title is 'Pavement Marking - 01.12.05'. It features a toolbar with icons for drawing and editing. The main panel is divided into several sections:

- Stripe Pattern:** A table with columns for 'Spacing Distance', 'Select', and 'Pay Item'. It lists six stripe patterns with spacing distances of 2.00 and 10.00. Each row has a 'Select' button and a 'Pay Item' dropdown menu.
- Make All Distances Equal:** A checkbox that is currently unchecked.
- Striping Method:** A dropdown menu set to 'Element Points'.
- Justification:** A dropdown menu set to 'Center'.
- Use Buffer:** A checkbox that is currently unchecked.
- Element Data:** Fields for 'Element', 'Start Point', and 'End Point', and a dropdown for 'Alignment' set to 'CL_SR61'.
- Stripe Labels:** Fields for 'Log File' (C:\Users\ps972r\AppData\Roaming\Phocaz\Logs\fdot.log), 'Dim Style', 'Font Style' (FDOT (Small)), and 'Level' (TextLabel). A 'Label Stripe' button is located below these fields.
- Draw Pattern:** A button at the bottom of the window.

The designer can enter a single pattern or draw up to 6 patterns at once. The designer can enter in the distance between stripe patterns along with the offset distance from the source element, the distance is measured from the center as a default, however the justification can be changed. There is a history list that the designer can quickly change patterns, the history list contains the last 10 patterns the designer has selected, to access the history list click on the pulldown arrow in the pay item name.

Spacing Distance – The designer enters the distance between each pattern.

Select – Clicking on any of the Stripe buttons opens the pay item database, where the designer can browse to select the appropriate pattern complete with symbology and pay item data.

Pay Item – The selection from the pay item database populates with the description in this list. The list will retain the most used 10 patterns to form the history of patterns.

Make All Distances Equal – When toggled it forces the patterns to be the same length.

Striping Method – There are 4 methods.

- **Element Points** – Places patterns via offsetting of a source line.

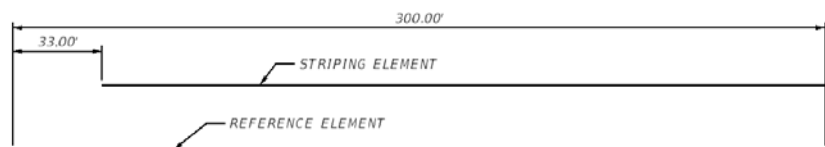
- **Draw Perpendicular** – Places patterns perpendicular to the source line.
- **Freeform Line** – Allows designer to draw patterns with snaps without constraints along a straight path.
- **Freeform Arc**- Allows designer to draw patterns with snaps along an arc.

Justification – There are three options to control how the pattern behaves when offset from a reference element.

- **Inside** - Offsets to the inside of the reference element.
- **Center** - Offsets using the center of the reference element.
- **Outside** - Offsets using the Outside of the reference element.

NOTE *The designer can make changes to the justification on the fly, meaning the preview of the pattern will change as you make your justification choices. When the desired outcome is visible left click to commit the striping pattern to the design file.*

The figure below shows how the buffer function works. The reference line used which is 300' long along with the new line created 33' to the right of the beginning point. The reference line is, a reference, it does not have to control the length of the new striping pattern created.



ELEMENT DATA

Element – Lists the name of the reference pattern.

Start Point – This lists the Coordinates or Station value of the Reference Pattern at the Starting Point.

End Point – This lists the Coordinates or Station value of the Reference Pattern at the Ending Point.

Alignment – You select an alignment using two methods that will place all patterns associated with the selected alignment. To select an alignment, click on the red selector button to the right of the alignment pulldown button. The recommended method is to use the Alignment pull down button that will list all available alignments in the design file including referenced alignments. The alignment name will populate in the select text box. This is required so that your quantity reports will be accurate.

Log File Location – To view or send the error log file to support for troubleshooting you can select the open button to access the log file.

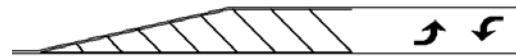
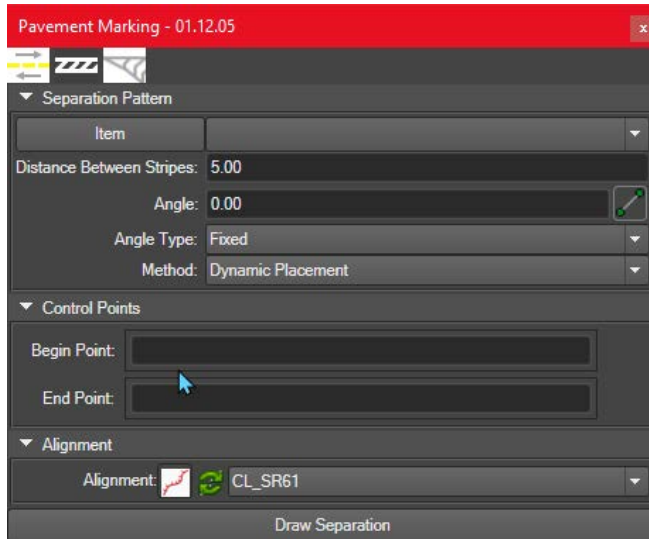
Font Style List – The designer can now control the Font Style used to label the striping patterns. At the time of this manual update, we are working on more control as to add additional label types and user edits.

Draw Pattern – Starts the placement command.

Label Stripe – Starts the Label placement process, the user selects the desired striping pattern to place the label.

SEPARATION MODE

Another Mode in the Pavement Marking tool is the Separation Mode. This mode allows you to draw stripes at an angle between elements such as a center turn lane where it approaches a left turn condition.



SEPARATION PATTERN

Item – Select this button to open the Pay Item Database to select a striping pattern. The list to the right contains a pulldown that lists the history of previously placed patterns.

Distance Between Stripes - Allows the designer to input the distance between stripes.

Angle – Allows the designer to enter a known angle or to select the pick box to pick two points in the drawing to designate the angle used.

Angle Type – Allows the designer to select either a **fixed** or **variable** angle for the stripes.

Method - There are two options to choose from for placement.

- **Dynamic Placement (default)** - Allows designer to draw patterns where no existing line work exists.
- **By Entity** - Allows designer to draw pattern on top of existing linework.

CONTROL POINTS

Begin Point – List the coordinates of the beginning striping point.

End Point – List the coordinates of the end striping point.

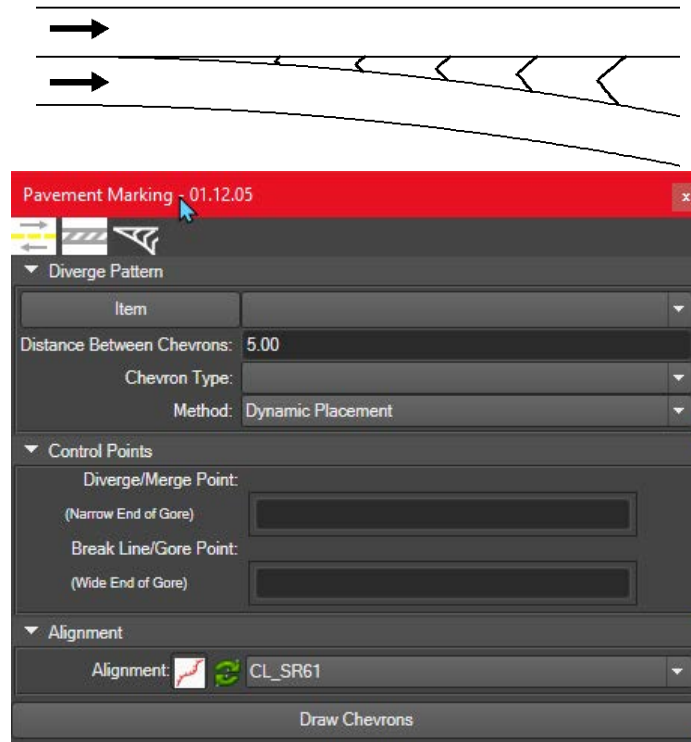
Associate Alignment with Pavement Marking – When toggled it will place all patterns associated with

the selected alignment. To select an alignment, click on the green selector button to pick your alignment. The alignment name will populate in the select text box. This is required so that your quantity reports will be accurate.

Draw Separation – Places the stripes based on the criteria selected.

CHEVRON DIVERGE/MERGE

The Chevron Diverge/Merge Mode is used for traffic channelization at a gore when traffic flows in the same direction as seen in the figure below. Refer to Design Standards for specific design criteria.



DIVERGE PATTERN

Item – Select this button to open the Pay Item Database to select a striping pattern. The list to the right contains a pulldown that lists the history of previously placed patterns.

Distance Between Chevrons – Allows the designer to input the distance between stripes.

Chevron Type – Allows the designer to select the Chevron type, which determines the direction of the pattern. The choices are Diverge and Merge.

Method- There are two options to choose from for placement.

- **Dynamic Placement (default)** - Allows designer to draw patterns where no existing line work exists.
- **By Entity** - Allows designer to draw pattern on top of existing linework.

CONTROL POINTS

Diverge/Merge Point – List the coordinates of the narrow end of gore.

Break Line/Gore Point – List the coordinates of the wide end of gore.

Associate Alignment with Pavement Marking – When toggled it will place all patterns associated with the selected alignment. To select an alignment, click on the green selector button to pick your alignment. The alignment name will populate in the select text box. This is required so that your quantity reports will be accurate.

Draw Chevrons – Places the stripes based on the criteria selected.

EXERCISE OVERVIEW

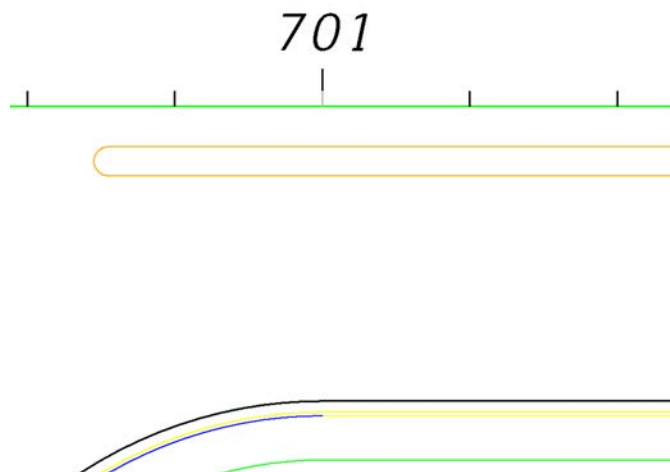
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NOTE All design files were created in Chapter 1, refer to Chapter 1 if needed.

EXERCISE 3.1 Draw Striping Patterns

In this exercise, the designer will place a 6" Solid White pattern representing the edge of pavement along the Curb & Gutter of the roadway in the intersection curb return.

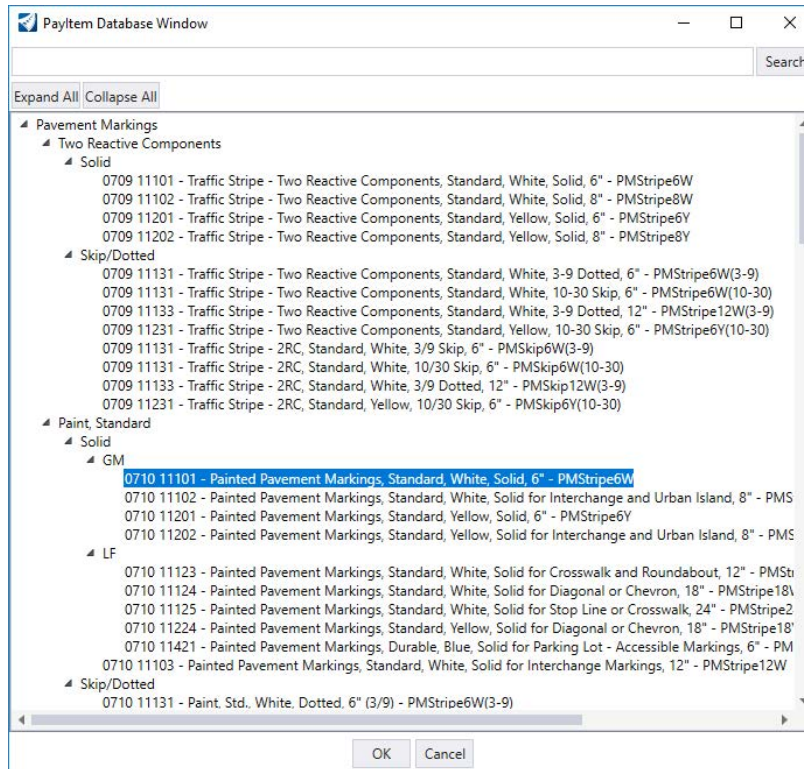
1. Open or continue working in *DSGNP01.dgn*.
2. **Twist View** and zoom to the area shown below.





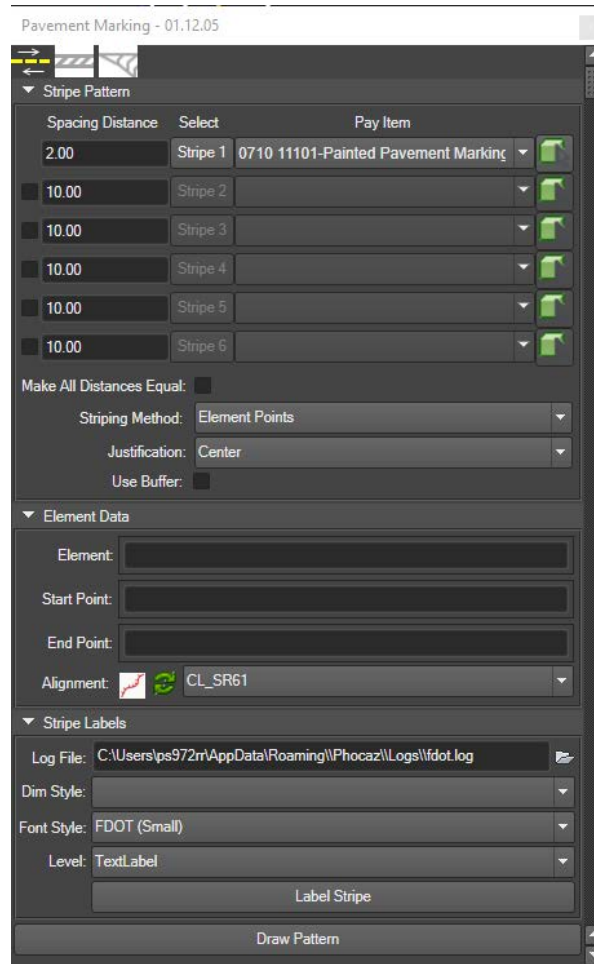
Pavement Marking

3. On the FDOT Ribbon select the Pavement Marking Tool.
4. Select the **Stripe 1** button to open the Pay Item Database Window.

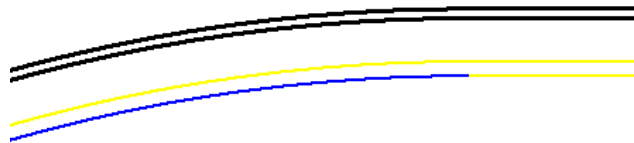


5. Select Pay Item **0710 11101** which is a 6" Solid White pattern.
6. Select **OK**.
7. For offset enter **.33** which equals 4".
8. Make sure **Element Points** is selected for the striping method. Make sure selections match the image below.

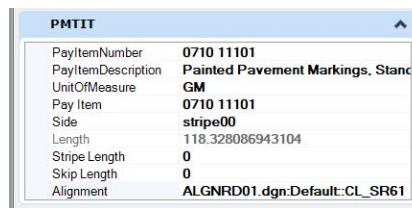
- Select the **Green Select Button** and select the **Alignment** in the file. Make sure the alignment name is shown and is correct before continuing.



- Click on **Draw Pattern** and select the EOP along the arc and left click to the outside. Your drawing should look like below:

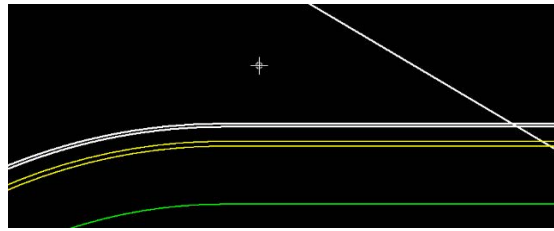
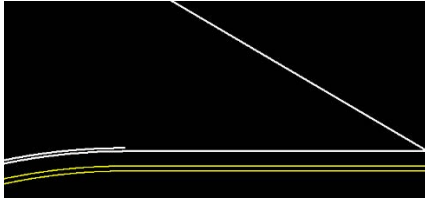


- Select the new pattern and look at the properties, you will see the pay item information & Alignment.




- Using the same pattern and criteria as before select **Draw Pattern**.
- Next to the previously placed striping select the tangent portion of the EOP.
- Draw the same pattern on the curve and tangent on the opposite side of the road.

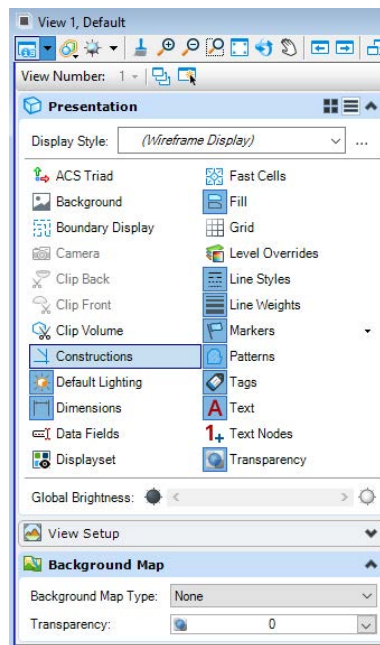
15. The drawing should look like the image below, save your file before continuing.



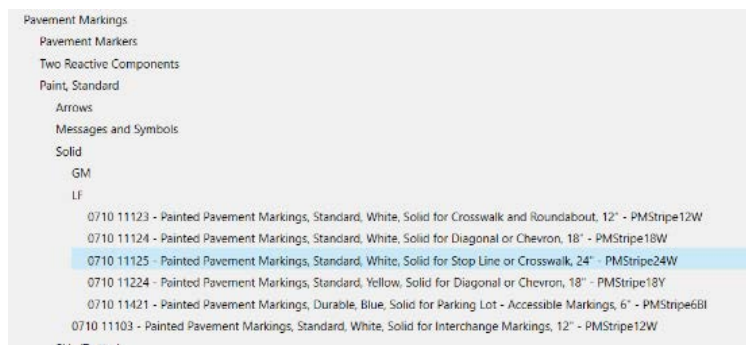
EXERCISE 3.2 Placing a 24" Stop Bar

In this exercise, the designer will place a 24" stop bar at the intersection using a construction line as a reference. Make sure Construction Lines are turned on and zoom to the intersection around Station 701+00.

1. Continue working in the *DSGNP01.dgn* drawing.
2. Open the **Pavement Marking** tool.
3. Select the **View Attributes** button  and turn on constructions to see the construction linework in the drawing (or press F7).



4. Select the **Stripe 1** button and browse the database for a **24" White Stop Line (0710 11125)**, select it and click **OK**.



- For Spacing Distance enter **0**. Match criteria as shown below.

Pavement Marking Tool - version 1.0.9.18

Stripe Pattern

Spacing Distance	Select	Pay Item
0.00	Stripe 1	0710 11125-Painted Pavement Markings, Standard, White, S
<input type="checkbox"/> 10.00	Stripe 2	
<input type="checkbox"/> 10.00	Stripe 3	
<input type="checkbox"/> 10.00	Stripe 4	
<input type="checkbox"/> 10.00	Stripe 5	
<input type="checkbox"/> 10.00	Stripe 6	

Make All Distances Equal:

Striping Method: Element Points
Justification: Inside
Use Buffer:

Element Data

Element:
Start Point:
End Point:

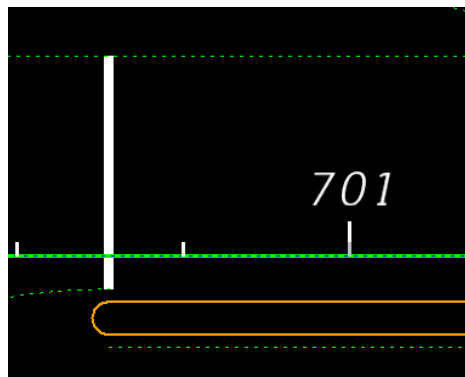
Associate Alignment with Pavement Marking:

Select: ALGNRD01.dgn Default - CLSR61

Associate Alignment

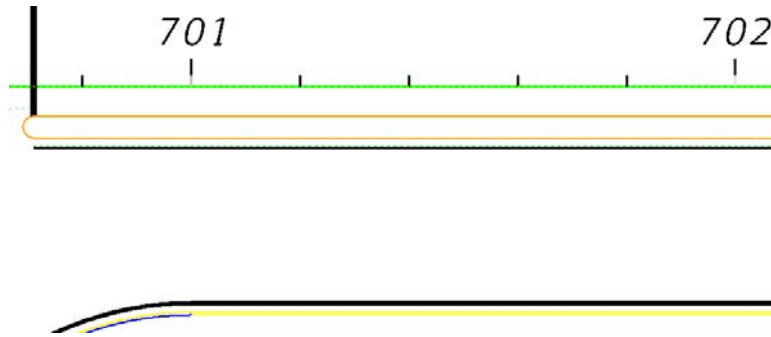
Draw Pattern

- Select the **Green Select Button** and select the **Alignment** in the file. Make sure the alignment name is shown and is correct before continuing. If the alignment is still listed in the select box disregard and continue.
- Select **Draw Pattern** and pick the Red Dashed Construction Line representing the Stop Bar and **Left Click** anywhere on the screen.
- Drawing should look like the image below.
- Toggle Construction Lines off.



EXERCISE 3.3 Placing Two Different Patterns

In this exercise, the designer will place two patterns, one representing the Bike Lane and the other a 10/30 Skip pattern for a lane line. Zoom to the area shown below.



1. Continuing in the *DSGNP01.dgn* file.
2. Open the **Pavement Marking** tool, if not open.
3. Select **Stripe 1** and browse the database for a **6" solid white stripe (0710 11101)**. Click on the desired selection and click **OK**.
4. Toggle on the **Stripe 2 pattern**. Toggling on makes each additional pattern active and will place them in the drawing. Make sure to un toggle patterns that are not used.
5. Select **Stripe 2** and browse to a **10/30 White Skip (0709 11131)**.
6. The Stripe 1 spacing distance should be set to **4** and Stripe 2 set to **12**.
7. Match all criteria as shown.

Pavement Marking Tool - version 1.0.9.18

Stripe Pattern

Spacing Distance	Select	Pay Item
4.00	Stripe 1	0710 11101-Painted Pavement Markings, Standard, White, S
<input checked="" type="checkbox"/> 12.00	Stripe 2	0709 11131-Traffic Stripe - Two Reactive Components, Stanc
<input type="checkbox"/> 10.00	Stripe 3	
<input type="checkbox"/> 10.00	Stripe 4	
<input type="checkbox"/> 10.00	Stripe 5	
<input type="checkbox"/> 10.00	Stripe 6	

Make All Distances Equal:

Striping Method: Element Points

Justification: Inside

Use Buffer:

Element Data

Element:

Start Point:

End Point:

Associate Alignment with Pavement Marking:

Select: ALGNRD01.dgn Default: CLSR61

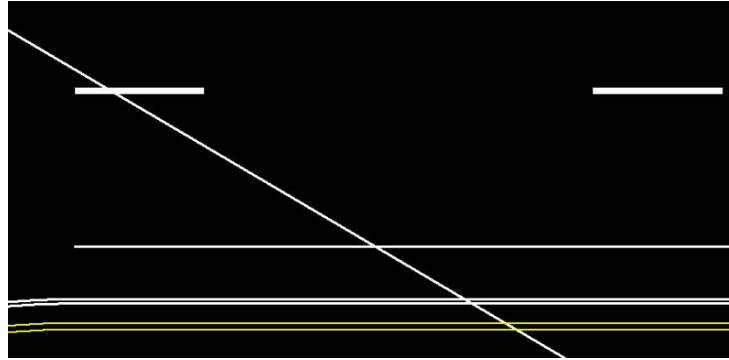
Associate Alignment

Draw Pattern

8. Select the green select button and pick on the Alignment in the file. Make sure the alignment name is shown and is correct before continuing. If the alignment is still listed in the select box disregard and continue.
9. Select **Draw Pattern** and pick the tangent EOP pattern that was placed in an earlier exercise.

10. **Left Click** in the Roadway side to place patterns.

11. Your file should look like below.



NOTE Notice as you make striping selections the history list fills in with the 10 most used patterns, this is a useful time saving feature. Some designers pick the 10 most used patterns before using the application so that when they do the desired patterns will already be in the list.

EXERCISE 3.4 Drawing A Freeform Arc

In this exercise, the designer will draw a striping pattern along an arc using the freeform feature.

1. Continuing in the *DSGNP01.dgn* file.
2. Open the **Pavement Marking** tool, if not open.
3. Set the Spacing Distance to **12**.
4. Use the same pattern as in the last exercise. Turn the Marker list to blank to not place RPM's in the pattern.
5. Change the Striping Method to **Freeform Arc**.
6. Make sure the **Alignment** is listed, if not re select it.
7. Select Draw Pattern and make the following clicks in the order shown below.



- Notice the command line gives you feedback as you make your click points. The pattern should be placed upon the third click on the outside of the arc. The drawing should match the image below.



NOTE The freeform Line and Arc will behave differently based on the different scenarios that you run across. It is recommended that you practice using these two features often so you can generate expected results in your design files.

EXERCISE 3.5 Placing and Editing a Crosswalk

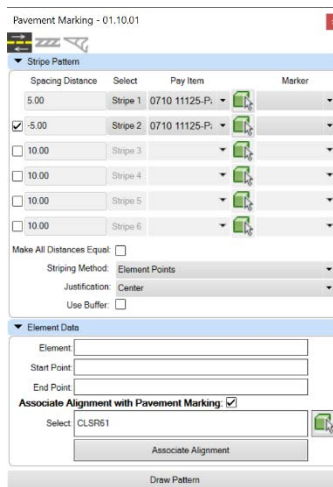
In this exercise, the designer will place two crosswalk patterns at the intersection using construction lines as a reference. Zoom to the area near the intersection.

- Continuing in the *DSGNP01.dgn* file.
- Open **Pavement Marking** tool, if not already open.
- Pull down the history list and select the **12" White Crosswalk (0710 11123)**, if the Pay item is not in the list browse to it in the database.



- For **Stripe 2** select the same **12" White Crosswalk pattern (0710 11123)**.
- For Justification select **Center**.
- Stripe 1 spacing distance should be 5.

7. Stripe 2 spacing should be -5



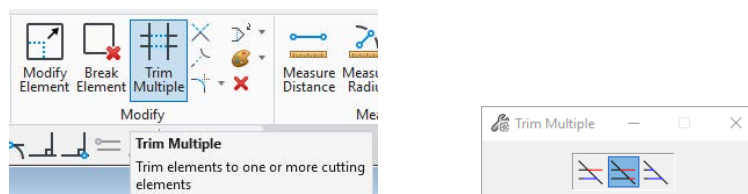
8. Select the green select button and pick on the Alignment in the file. Make sure the alignment name is shown and is correct before continuing. If the alignment is still listed in the select box disregard and continue.
9. Select **Draw Pattern** and pick the Red dashed construction line and left click. Notice the crosswalk lines are on both sides of the construction line 10' wide
10. The drawing should look like below.



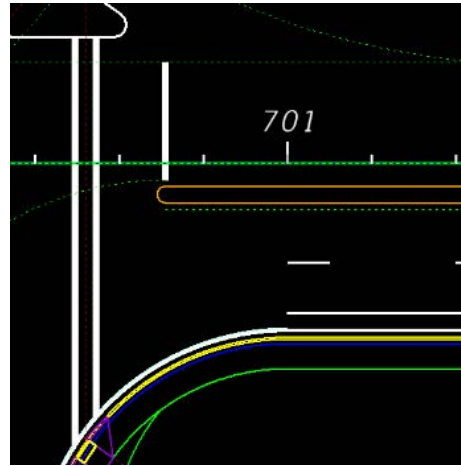
NOTE *There is a little clean up to do. Trimming and extending on both sides of the crosswalk pattern.*

NOTE *Be aware if you break the striping pattern line type, one half will contain the appropriate pay item data and the other half will be stripped of all pay item information, so try to use trim and extend for your manual editing.*

11. At the crosswalk island, switch to the **Drawing** Ribbon and select **Trim Multiple**




12. Select the white island line as the cutting element and pick the two crosswalk lines that will be trimmed away.
13. Next, pan to the HC Ramp on the other side and repeat the same steps. Pick the EOP striping you placed earlier as the cutting element and trim the crosswalk lines.

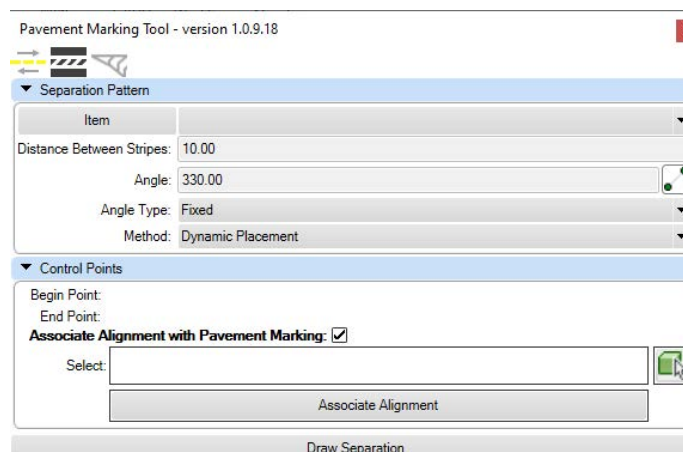


14. Drawing should look like the image above.

EXERCISE 3.6 Adding Patterns inside Cross Walk

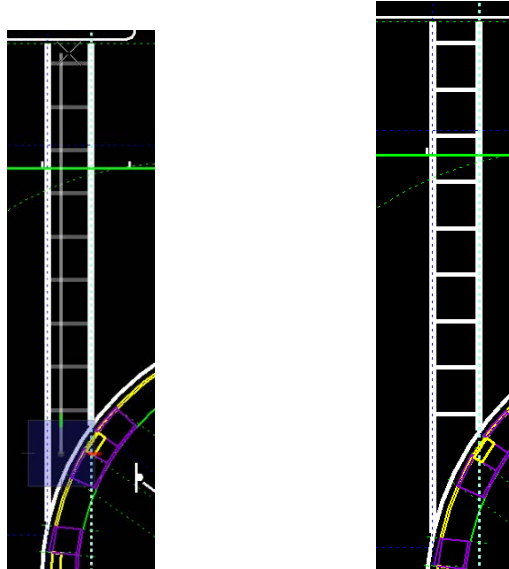
In this exercise the designer will use the Separation Mode in the Pavement Marking tool to place cross walk bars inside the previously placed cross walk.

1. Continuing in the *DSGNP01.dgn* file.
2. Open **Pavement Marking** tool if not already open.
3. Switch to Separation **Mode**. 
4. Select the **Item** button and browse to the **24" Solid White Crosswalk Pay Item (0711 14125)** and select **OK**.
5. Make Selections as shown below.



6. Select the **Green Select Button** and pick on the **Alignment** in the file. Make sure the alignment name is shown and is correct before continuing. If the alignment is still listed in the select box disregard and continue.

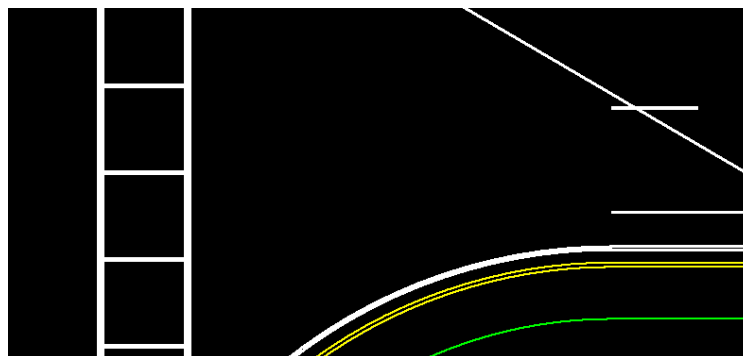
7. Select **Draw Separation** and select each side of the crosswalk, **Left Click** near the bottom to start the drawing process.
8. Drag your cursor along the inside from bottom to top.
9. Notice the preview of Patterns. While the striping is in preview mode you can make any changes to the distance between stripes and/or the angle and the preview will update to reflect the changes. When you are ready to commit the striping to the file **Left Click**. The striping changes from gray to bright white when the striping is committed to the file.
10. The drawing should look like the image below.



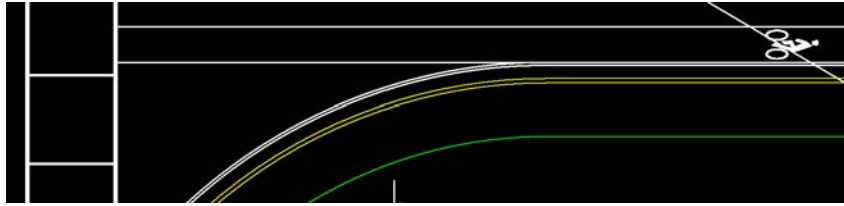
EXERCISE 3.7 *Extend Bike Lane Striping and 10/30 Skip to Intersection*

In this exercise the designer will extend the Bike Lane striping and 10/30 Skip pattern that was placed in an earlier exercise.

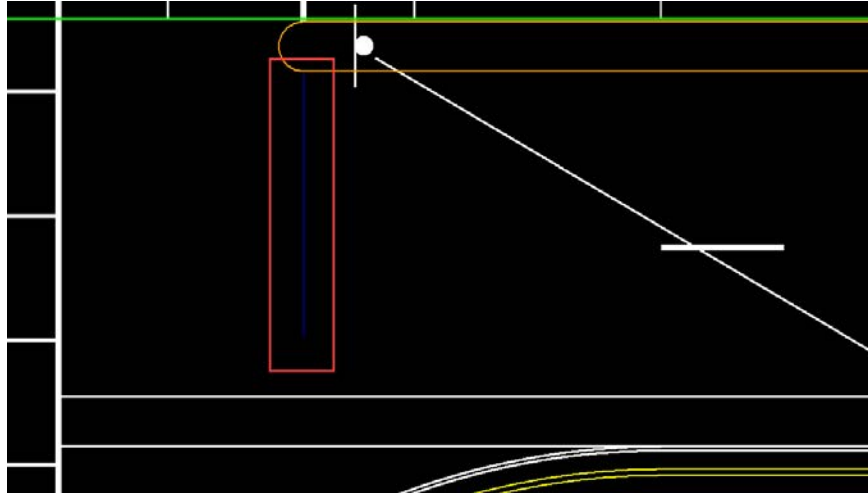
1. Continue working in the *DSGNSPO1.dgn* file.
2. Zoom to the intersection as shown below.



11. **Extend** the Bike Lane to the Crosswalk as shown below.



12. **Draw** a temp construction line from the pt station of the traffic separator as shown below.



13. **Extend** the 10/30 skip line to the temp construction line.

14. **Delete** temp blue construction line.

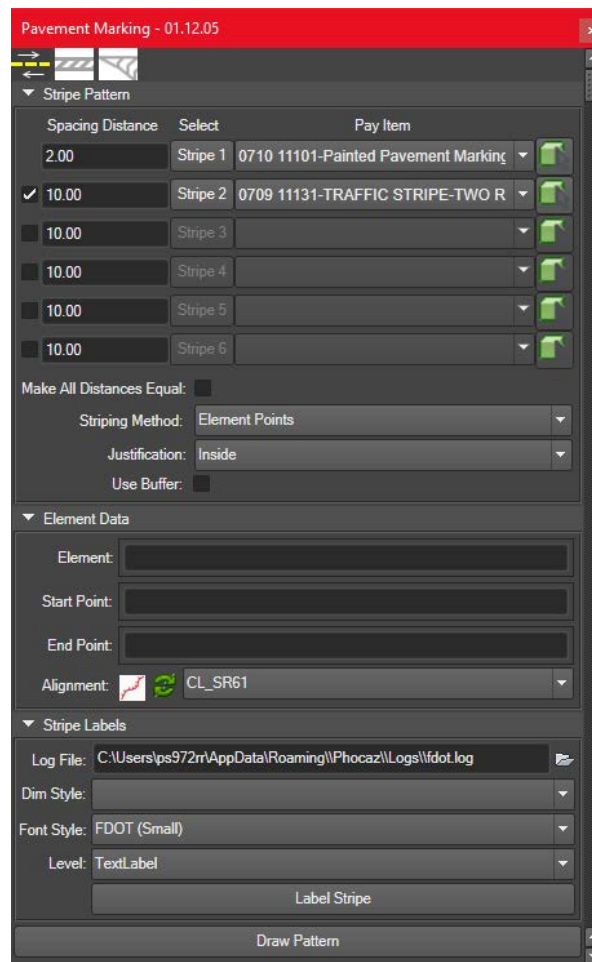
15. Your drawing should look like below.



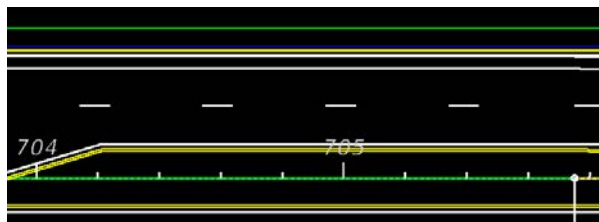
EXERCISE 3.8 Adding Bike Lane and 10/30 Skip Pattern

In this exercise the designer will add a Bike Lane striping and 10/30 Skip pattern on the north side of the road.

1. Continue working in the *DSGNSPO1.dgn* file
2. Zoom to the area at Station **705+00**
3. **Stripe 1** is the 6" solid White, **Stripe 2** is the 10/30 Skip pattern.
4. For Spacing Distance enter **4** for stripe 1 and **12** for stripe 2.
5. Select the **Green Select Button** and select the **Alignment** in the file. Make sure the alignment name is shown and is correct before continuing. If the alignment is still listed in the select box disregard and continue. Match image below.



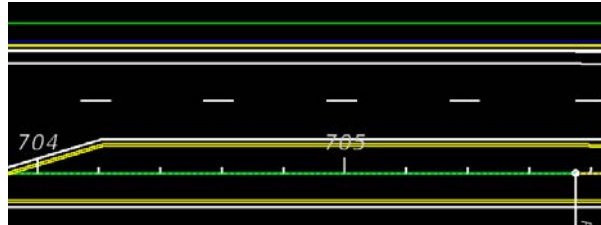
6. Select **Draw Pattern** and select the EOP pattern you placed in a previous exercise.
7. Your drawing should match the image below.



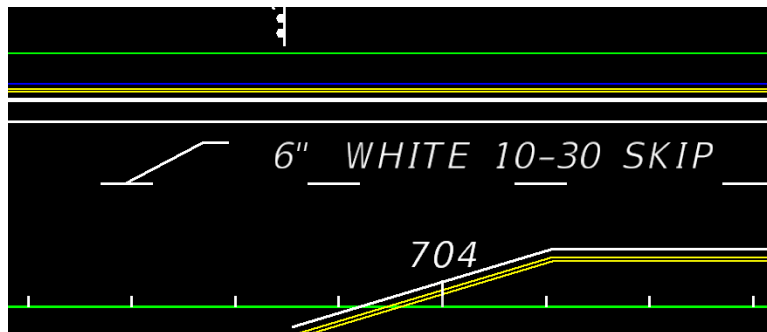
EXERCISE 3.9 *Placing a Striping Label*

In this exercise the designer will add a Label to the 10/30 Skip pattern on the north side of the road.

1. Continue working in the *DSGNSPO1.dgn* file
2. Make sure your current Level is set to **TextLabel**.
3. Open the Pavement Marking application.
4. Set the Font Style List to **FDOT Medium** if not already set.
5. Select Label Stripe and Select the 10-30 Skip stripe as shown below.



6. The label is attached to your mouse cursor in preview mode, drag the label off and to the right from your initial click. Left Click to place the label in the file.



Keep in mind if the label is too big or too small you can adjust the Font Style. Any labels that are placed can be manually edited to add additional information.

4

TRAFFIC DESIGN

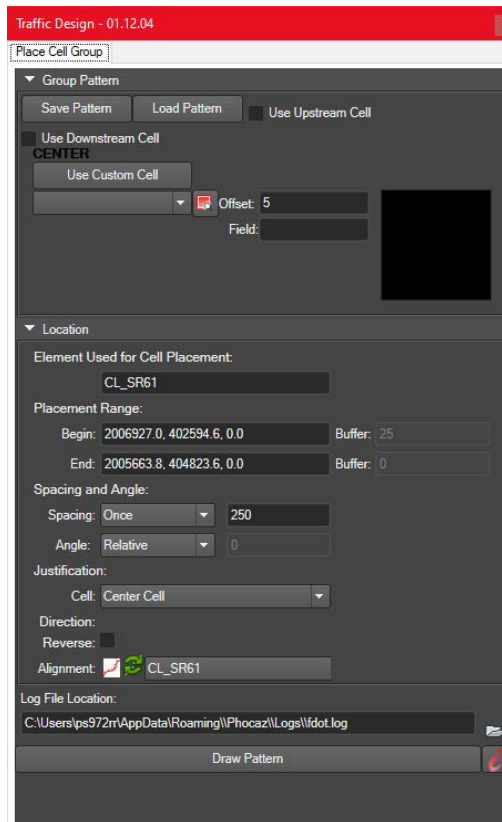
OBJECTIVE

The objective of this chapter is to provide an overview of the traffic design Application, which contains **Place Cell Group**.

INTRODUCTION

This chapter demonstrates Place Cell Group.

Place Cell Group - An application within the FDOT WorkSpace that is used to place cells along an alignment, such as painted messages, rpm's, Light Poles, and others. The application is located on the Traffic Plans panel on the FDOT Ribbon.



An Overview of the dialog and its applications is below.

PLACE CELL GROUP

GROUP PATTERN

Save Pattern/Load Pattern – This function allows the designer to save a one, two, or three pattern cell(s), this is mainly used for painted pavement messages. The saved pattern contains the pay item data that it was created with, when recalled the designer can place the pattern without having to browse through the database.

Use Upstream/Downstream Cell - When toggled on it will open the ability to use the upstream and downstream cells for a total of three cells. The default is only one cell is used for placement.

Cell Selection with Preview – The default active cell is the center, the top and bottom contain toggle buttons to make them active also. The red button allows the designer to browse the database for the desired pattern. A preview window is supplied showing the selected cell. The designer must enter an offset distance from the selected element. When the top and bottom cells are active there is an additional control that becomes active, the Upstream and Downstream spacing, which controls the distance (measured from center to center of cells) between the pavement messages.

LOCATION

Element Used for Cell Placement – This provides information on the source element used for cell placement.

Cell Placement Range – This provides information on the source element such as station values if element is an alignment. If it is not an alignment the information is the begin and end coordinates. The buffer controls allow the designer to place cells at any starting or end point along the source element.

Spacing and Angle – The designer can control whether the cells can be placed once or incrementally along the source element. The angle control allows options of Relative, Absolute, and Perpendicular. If you change the spacing to increment the data box becomes active allowing the designer to enter a spacing distance for the cells, mostly used for RPM's.

Direction Reverse – This will reverse the selected elements direction, which affects how the cell rotates about the source element. If you find your cell is not rotating the direction you expect toggle this option on, and the preview should change rotation of the cell in preview mode.

Associate Alignment with Element -- When toggled it will place all patterns associated with the selected alignment. To select an alignment, click on the green selector button to pick your alignment. The alignment name will populate in the select text box. This is required so that your quantity reports will be accurate.

Log File Location - This allows the user to open the error logfile for the place cell group application. In the event of errors or crashing please send this file along with your support email to central office support.

Draw Pattern – This starts the placement process, which will ask the designer for a source element to place off of. When placing there is a preview of how the placement will look, if it is not right the designer can change parameters until the preview looks correct. Left click when you are ready to commit your cells to the drawing.

EXERCISE OVERVIEW

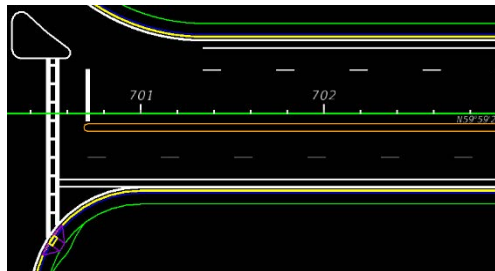
EXERCISE 4.1 PLACING PAINTED PAVEMENT MESSAGE.....	79
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EXERCISE 4.1 *Placing Painted Pavement Message*

In this exercise the designer will place a Bike Symbol and direction arrow in the Bike Lane on the South side of the roadway.

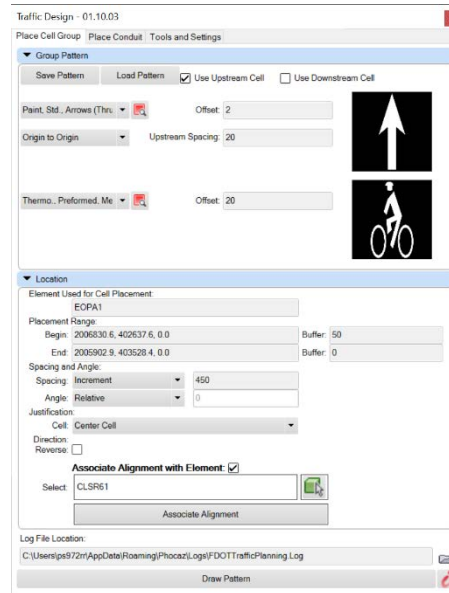
NOTE *All design files were created in Chapter 1, refer to Chapter 1 if needed.*

1. Continuing in the *DSGNP01.dgn* file.
2. Zoom to Station **701+00** area as shown below.

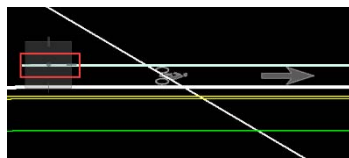


3. Open **Traffic Planning**.
4. **Toggle on** the Use Upstream Cell.
5. Select the **Red** Browse button on the top cell section and select a **Thru arrow (0710 11170)**.
6. Select the **Middle** browse button and select a **Bike symbol (0711 14160)**.
7. Set the Offset to **2** for both cells.
8. For Upstream Spacing enter **20**.
9. Set spacing to **Increment** and distance to **450**.
10. Set the buffer distance to **50**.
11. Set Angle to **Relative**.
12. **Toggle on Associate Alignment** select the alignment pick button and select the **Alignment**.

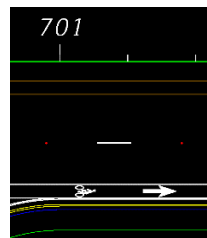
12. Notice the alignment name in the select box. Match image below.



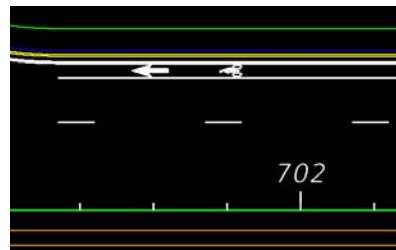
13. Select **Draw Pattern** and select the bike lane line as shown below.



14. The symbols appear in preview mode. If satisfied with the placement preview left, click for placement. Notice how the additional symbols are placed following around the curve.



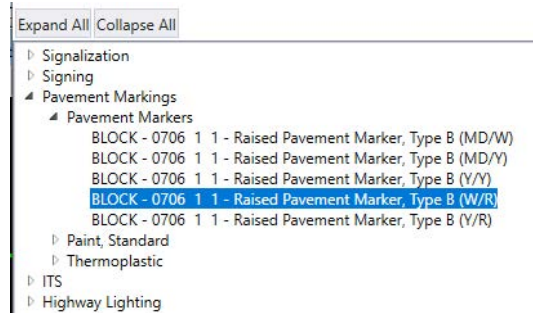
15. Place the same pattern on the opposite side of road in the Bike Lane. Drawing should look like below.



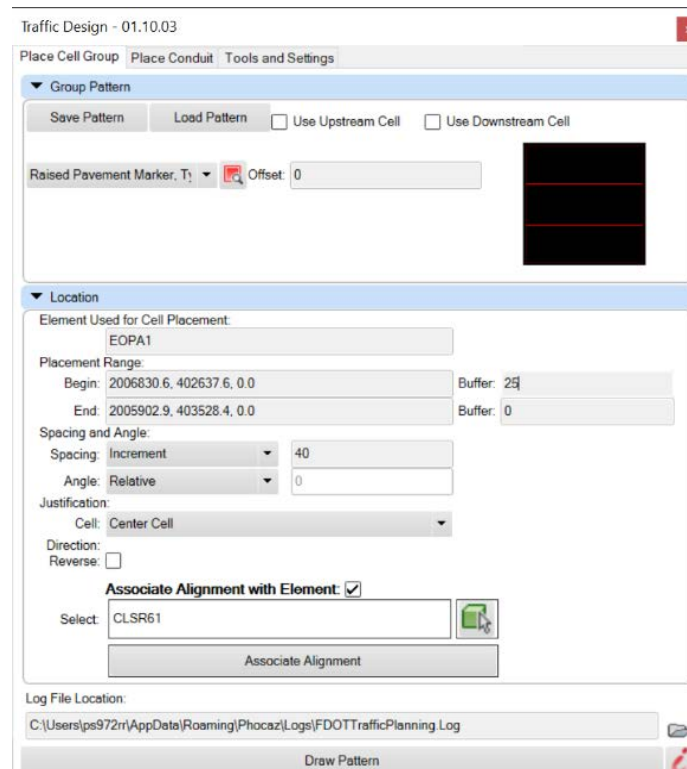
EXERCISE 4.2 Placing RPMs

In this exercise the designer will place a White/Red rpm along a 10/30 skip pattern that was placed in an earlier exercise.

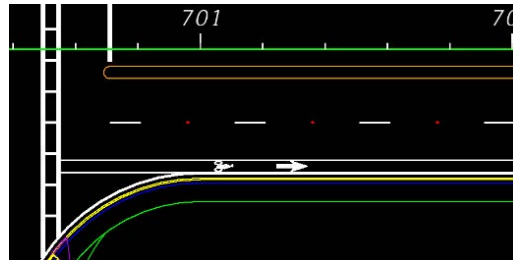
1. Continuing in the *DSGNP01.dgn* file.
2. Open the **Traffic Planning** app to get to the **Place Cell Group**.
3. **Untoggle** the top and bottom cell area if active. You will be using the middle cell for this exercise.
4. Select the **Red** browse button and browse to pay item **0706 1 1 W/R RPM**. You may need to collapse all to find the rpm easier.



5. Enter **0** for the offset distance.
6. Spacing should be **Increment** and **40** for the distance between each.
7. Angle should be **Relative**.
8. For Cell Placement Range enter **25** in the Begin Buffer box, this will start the placement starting 25' from the beginning of the pattern. Match image below.



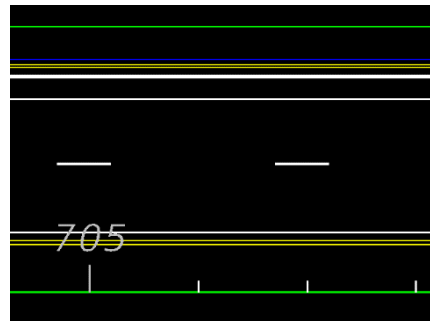
9. Select **Draw Pattern** and select the 10/30 skip we placed earlier, notice the preview of the rpms.
10. Make sure the rotation is set to **Relative**, if you look at the preview around a curve the rpms should be rotated correctly. It is best to check this while in preview mode, since you would have to delete one at a time to restart the placement process.
11. **Left Click** for final placement.
12. Drawing should look like the image below.



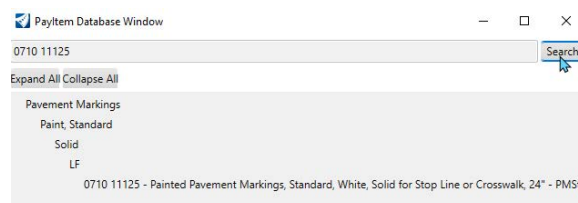
EXERCISE 4.3 *Combination Striping and Painted Pavement Message*

In this exercise the designer will create and place a School Pavement message. In addition to the message this pattern requires two perpendicular pavement stripes.

1. Continue working in the *DSGNP01.dgn*.
2. Zoom to the left side of the roadway near Station **705** as shown below.

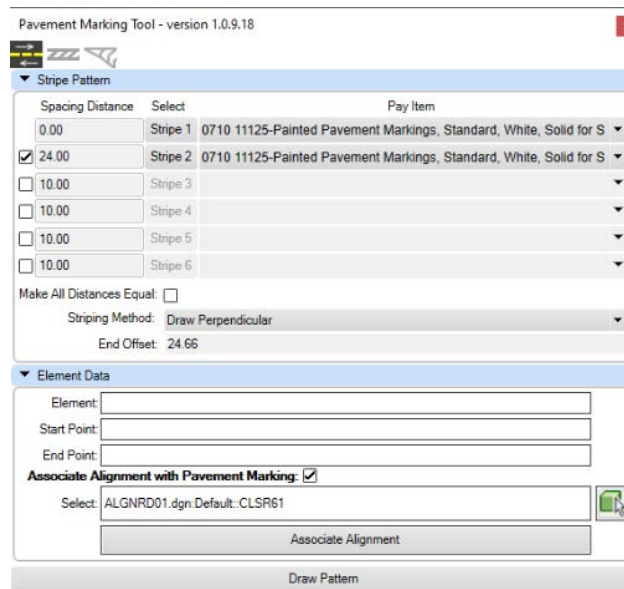


3. Open the **Pavement Marking Tool**.
4. Toggle on **Stripe Two** to make it active.
5. Set Stripe 1 Spacing Distance to **0** and Stripe 2 to **24**.
6. Browse the database and select a **Solid White 24" Stripe (0710 11125)** for both patterns. You can use the search option instead of browsing the categories.



7. Set the Striping Method to **Draw Perpendicular**.

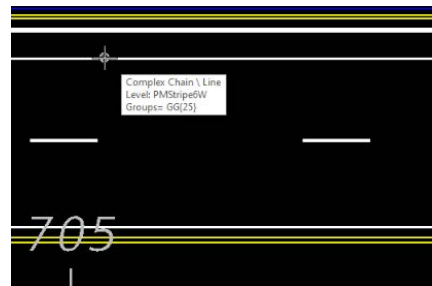
8. Set End Offset to **24.66**.



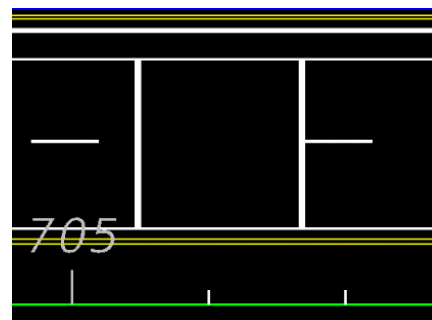
9. Make sure the Alignment is selected either from the pull down list or drawing selection..

10. Select **Draw Pattern**.

11. **Left Click** the first point as shown below.



12. **Left Click** anywhere below the first point in the travel way. Your drawing should look like below.

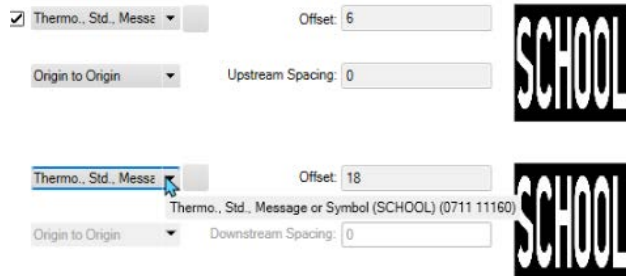


Next you will add the School message in both travel lanes.

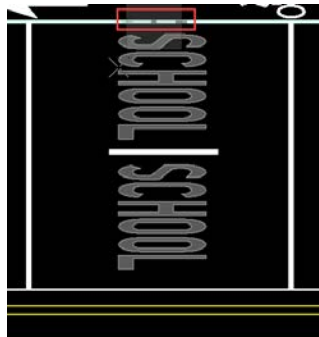
13. Close the Pavement Marking tool and open **Traffic Planning**.

14. Make sure the top cell area is toggled. You will be using the top and middle cell areas.

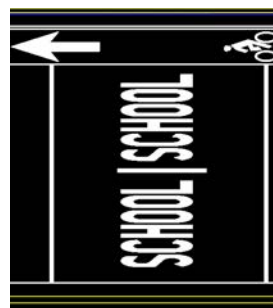
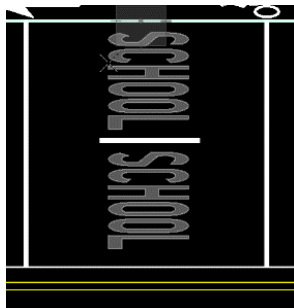
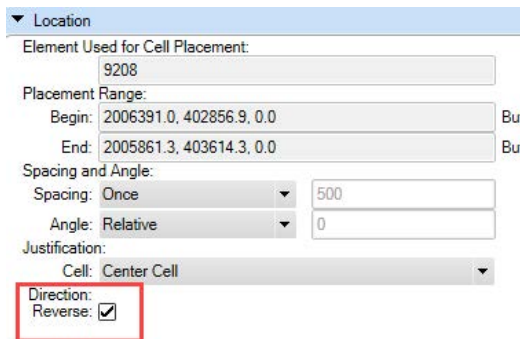
15. Select the browse button and select the (**School 0711 11160**) cell.



16. Set the Top offset to **6** and the middle offset to **18**. Set the Upstream Spacing to **0**.
17. Set Spacing to **Once** and Angle to **Relative**.
18. Select the **Alignment** to associate the pattern.
19. Select **Draw Pattern** and pick the bike lane striping as shown. The message should be centered between the two perpendicular stripes.



20. The preview shows the two messages but notice how the message is rotated 180 degrees the wrong direction. Toggle on the **Direction Reverse** option. The preview should now show the messages rotated the correct way. Left click to commit the pattern into the design file. You may want to Untoggle the Direction Reverse before next pattern placement.



NOTE You can use *Place cell group* to place custom cells complete with pay item numbers and descriptions.

5

SIGNALIZATION PLANS

OBJECTIVE

The objective of this chapter is to provide an overview of tools that are within the Signal Design application that will allow you to place cells with pay item data attached. The designer can build signal cells with multiple pay item data attached. Mast Arm assemblies are now included which will allow the designer to place the desired arm scenario with just a few clicks. The Signal Design tool also contains a place label function along with an Update Label ability if you change any of the placed elements. All placed elements require that an alignment be associated so the takeoff manager will quantify your design.

INTRODUCTION

This chapter demonstrates the tools that are available within the Signal Design tool.

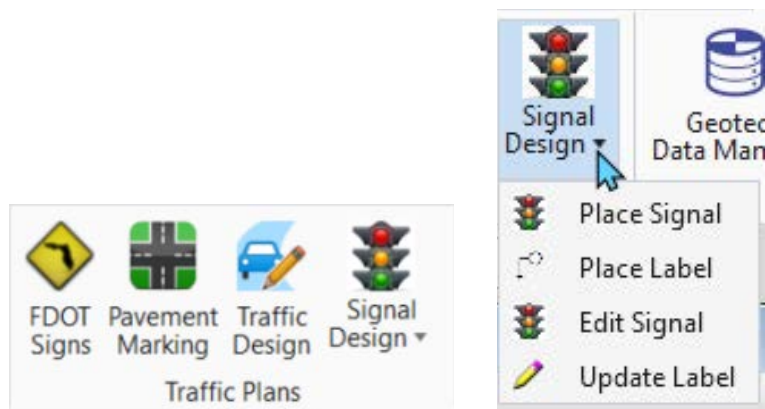
Signal Design - An application located on the FDOT Ribbon that is used to place cells used for signal design that contain the appropriate pay item data per the BOE. When launched the signals dialog opens.

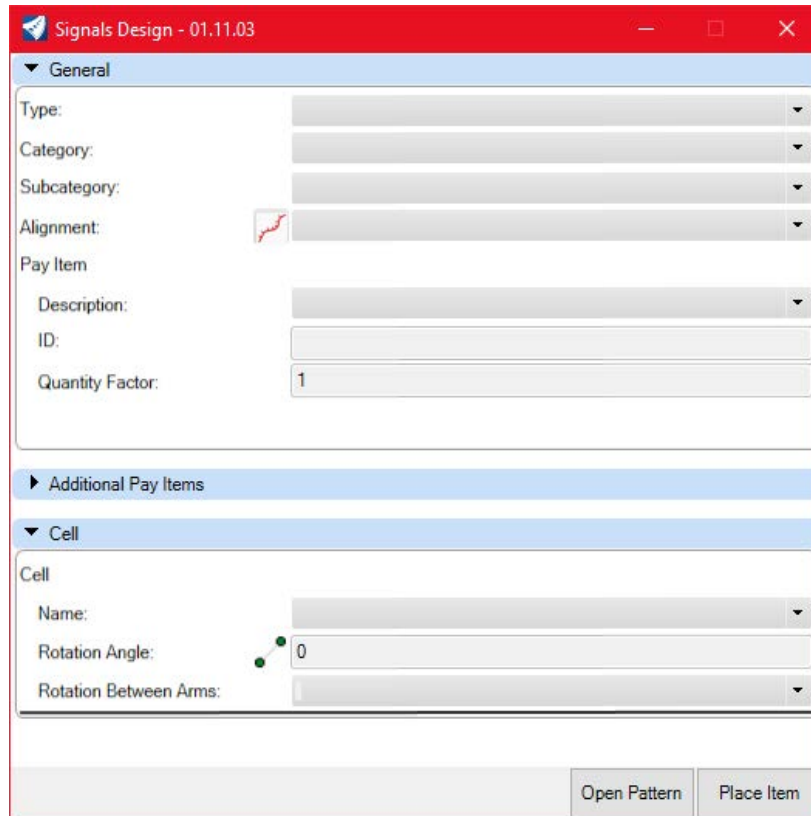
Place Signal - Executes the placement of the selected elements in the design file along an alignment.

Place Label - Executes the place label of the placed elements in the design file.

Edit Signal - Executes the edit signal function that will allow you to edit an already placed signal element.

Update Label - Executes the update label function that will change the label on an edited element.



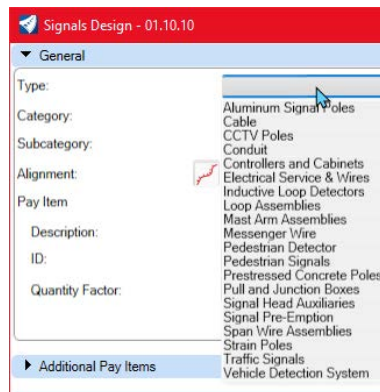


An Overview of the dialog and its applications is below.

SIGNALS

GENERAL

Type - This contains all the items in the Signalization category.



Category –The category list is controlled by the tab the user selects, there are different choices based on which tab is selected.

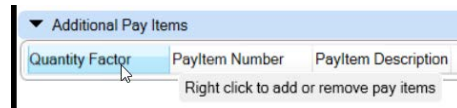
Subcategory –The Subcategory option becomes active based on your category selection. This will allow you to refine your selections.

Alignment - The Alignment option allows you to either pulldown a list of all alignments in the design file to choose from or select the red alignment button which allows you to graphically select the alignment in the design file.

Pay Item - Displays the pay item data

- **Description** - Displays the description of the pay item of the element you select. The description is based on the BOE.
- **ID** - Displays the pay item number.
- **Quantity Factor** - This controls the number of items that will be placed based on the filled in criteria.


ADDITIONAL PAY ITEMS



This section displays the Pay Item numbers and Description of each element you add to your collection. You right click on the header to display the Remove or Append Pay Items. The Append PayItem selection opens the pay item database so you can select your element(s).

CELL

Name - The pulldown displays the cells that are available based on your previous selections. Each tab along the top will display different cells to choose from.

Rotation Angle - Allows the user to type in a known angle or the green selection button  to graphically draw the angle in the design file and it will populate in the list.

Preview Window - Show a preview of the cell selected for placement.

FROM PATTERN

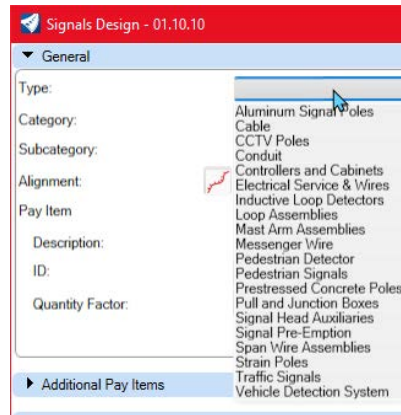
Allows the user to select a previously saved signal assembly. This is useful when you have a cell that has multiple pay items attached. Build it once and recall it for future placement.

PLACE ITEM

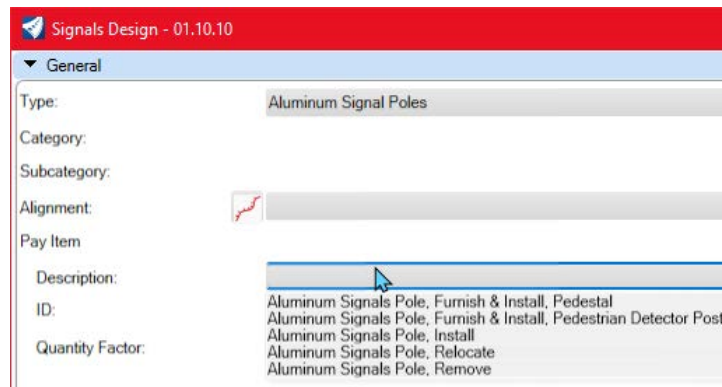
Executes the placement of the signal assembly based on the previous selections.

CATEGORY TYPE OPTIONS

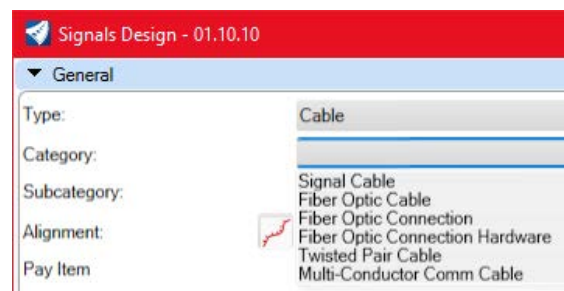
This section provides an overview of all the options in the pulldown list.



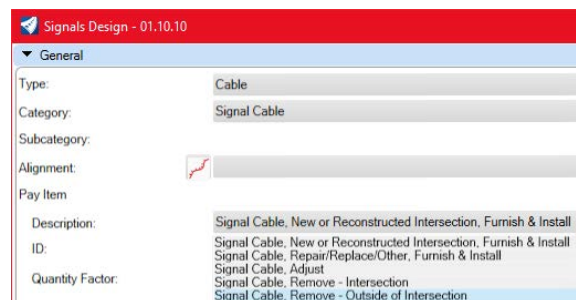
ALUMINUM SIGNAL POLES



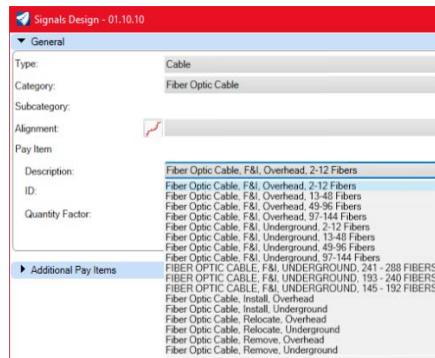
CABLE



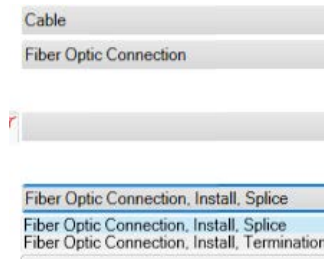
SIGNAL CABLE



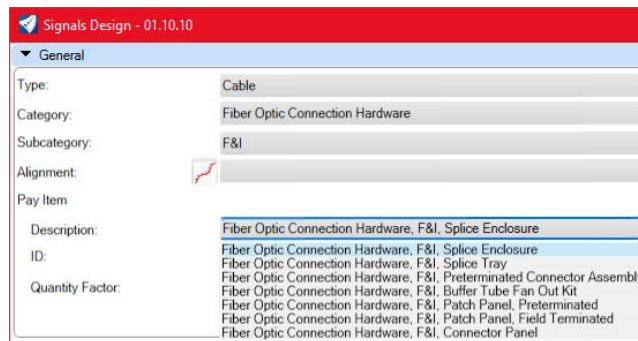
FIBER OPTIC CABLE



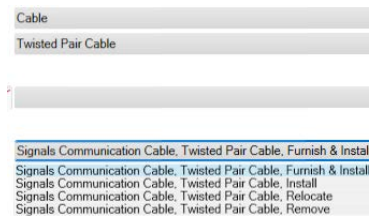
FIBER OPTIC CONNECTION



FIBER OPTIC CONNECTION HARDWARE



TWISTED PAIR CABLE



MULTI-CONDUCTOR COMM CABLE

Cable
Multi-Conductor Comm Cable
Multi-Conductor Communication Cable, Furnish & Install
Multi-Conductor Communication Cable, Furnish & Install
Multi-Conductor Communication Cable, Install
Multi-Conductor Communication Cable, Relocate
Multi-Conductor Communication Cable, Adjust/Modify
Multi-Conductor Communication Cable, Remove

CCTV POLES

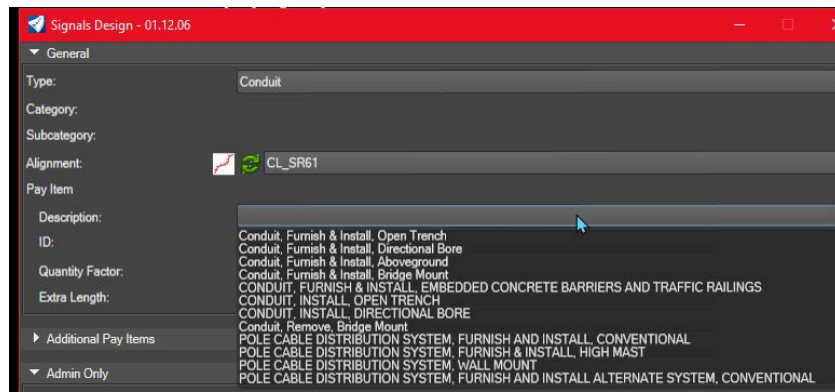
CONCRETE CCTV POLE

CCTV Poles
Concrete CCTV Pole
Concrete CCTV Pole, Furnish & Install, with Lowering Device (63')
Concrete CCTV Pole, Furnish & Install, with Lowering Device (63')
Concrete CCTV Pole, Furnish & Install, with Lowering Device (69')
Concrete CCTV Pole, Furnish & Install, with Lowering Device (75')
Concrete CCTV Pole, Furnish & Install, with Lowering Device (80')
Concrete CCTV Pole, Furnish & Install, with Lowering Device (86')
Concrete CCTV Pole, Furnish & Install, without Lowering Device (63')
Concrete CCTV Pole, Furnish & Install, without Lowering Device (69')
Concrete CCTV Pole, Furnish & Install, without Lowering Device (75')
Concrete CCTV Pole, Furnish & Install, without Lowering Device (80')
Concrete CCTV Pole, Furnish & Install, without Lowering Device (86')
Concrete CCTV Pole, Install
Concrete CCTV Pole, Shallow Pole Removal
Concrete CCTV Pole, Complete Pole Removal

STEEL CCTV POLE

CCTV Poles
Steel CCTV Pole
Steel CCTV Pole, Furnish & Install, with Lowering Device (50')
Steel CCTV Pole, Furnish & Install, with Lowering Device (50')
Steel CCTV Pole, Furnish & Install, with Lowering Device (55')
Steel CCTV Pole, Furnish & Install, with Lowering Device (60')
Steel CCTV Pole, Furnish & Install, with Lowering Device (65')
Steel CCTV Pole, Furnish & Install, with Lowering Device (70')
Steel CCTV Pole, Furnish & Install, without Lowering Device (50')
Steel CCTV Pole, Furnish & Install, without Lowering Device (55')
Steel CCTV Pole, Furnish & Install, without Lowering Device (60')
Steel CCTV Pole, Furnish & Install, without Lowering Device (65')
Steel CCTV Pole, Furnish & Install, without Lowering Device (70')
Steel CCTV Pole, Install
Steel CCTV Pole, Remove Pole, Foundation Remains
Steel CCTV Pole, Remove Pole, Shallow Foundation Removal, Bolt on Attachment
Steel CCTV Pole, Remove Pole, Complete/Deep Foundation Removal, Bolt on Attachment

CONDUIT



This tool is used to draw conduit between cells such as light poles or Signalization. The Pay Item database controls these options and when drawn the symbology including the Pay Item number is correctly placed.

CONDUIT SETTINGS

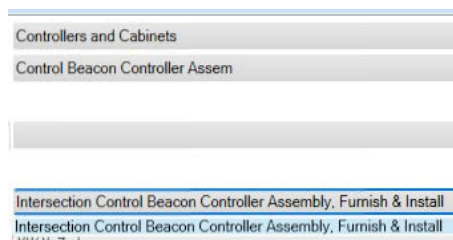
Select Pay Item – When selected the pay item database opens allowing the designer to select the desired conduit. When selected the conduit type is listed next to the button.

Associate Alignment with Element - When toggled it will place all conduit associated with the selected alignment. To select an alignment, click on the green selector button to pick your alignment. The alignment name will populate in the select text box. This is required so that your quantity reports will be accurate.

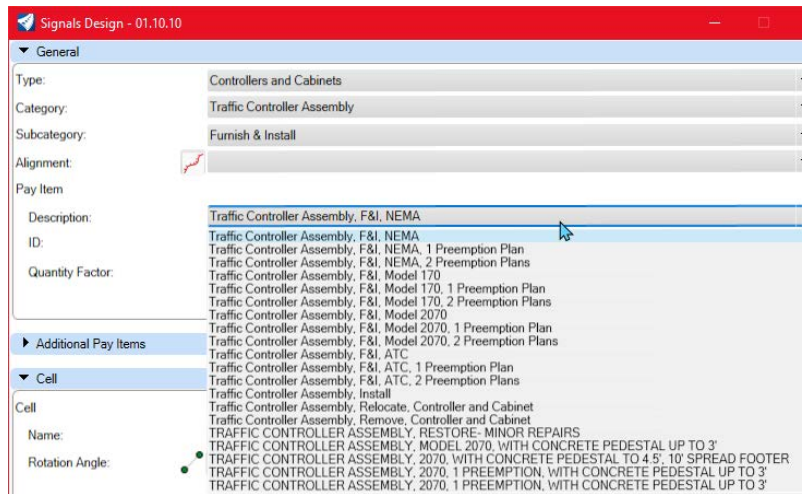
Draw Conduit – When selected allows the designer to draw freeform in the design file using snaps.

CONTROLLERS AND CABINETS

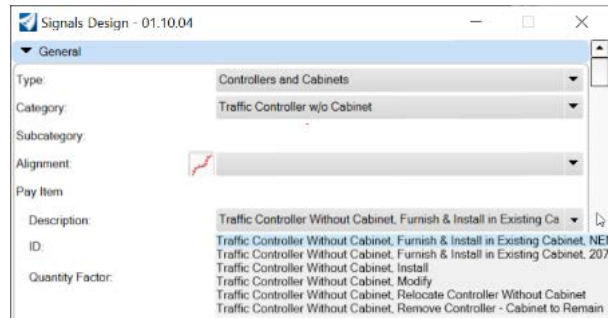
CONTROL BEACON CONTROLLER ASSEMBLY



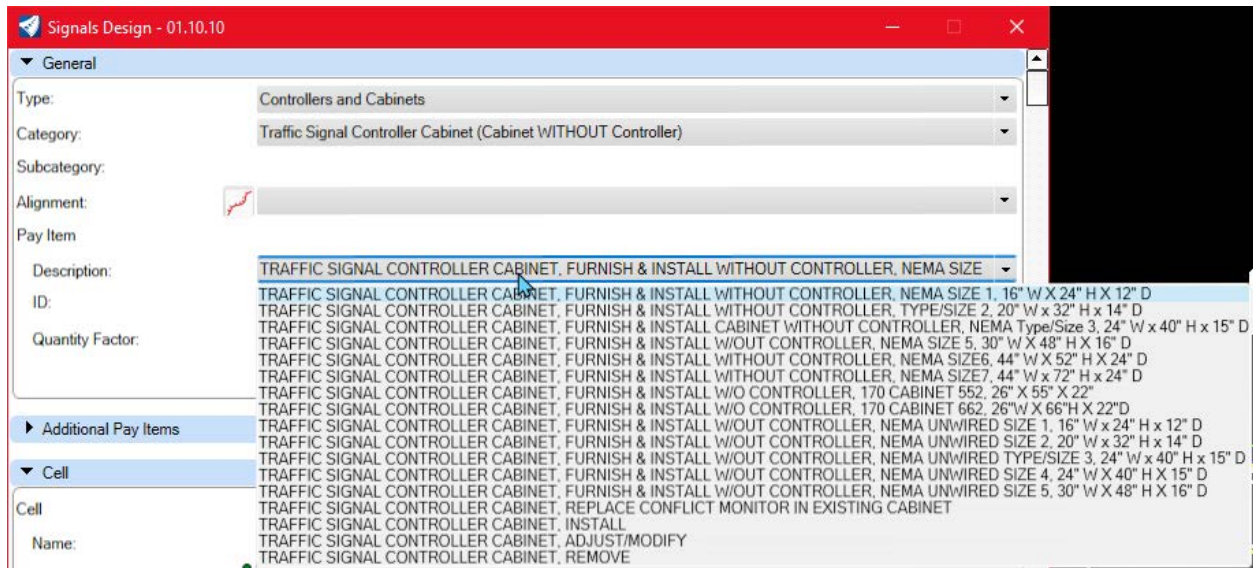
TRAFFIC CONTROLLER ASSEMBLY



TRAFFIC CONTROLLER W/O CABINET

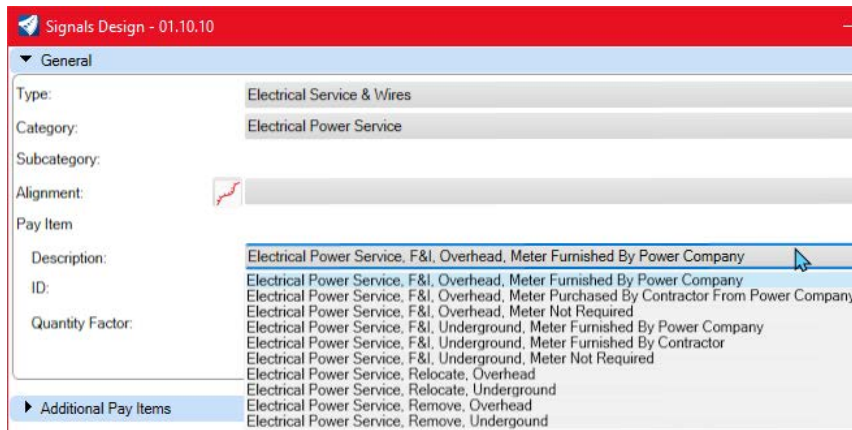


TRAFFIC SIGNAL CONTROLLER CABINET (CABINET W/O CONTROLLER)

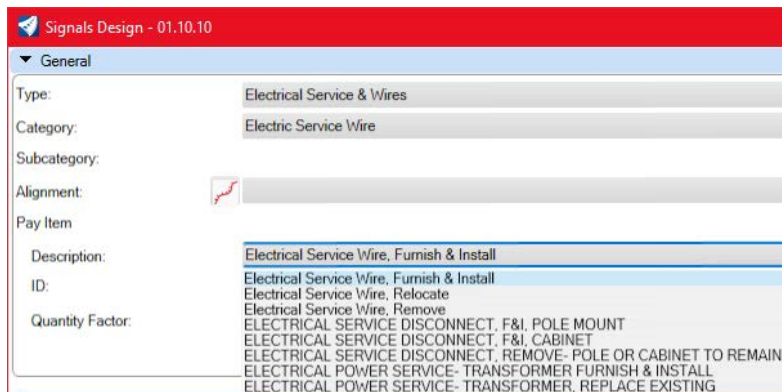


ELECTRICAL SERVICE & WIRES

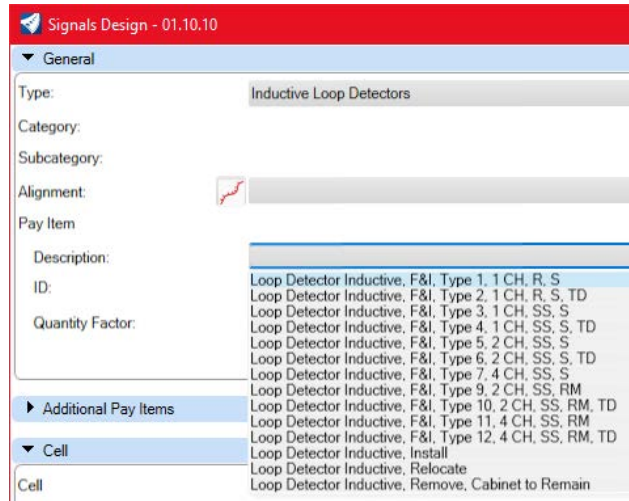
ELECTRICAL POWER SERVICE



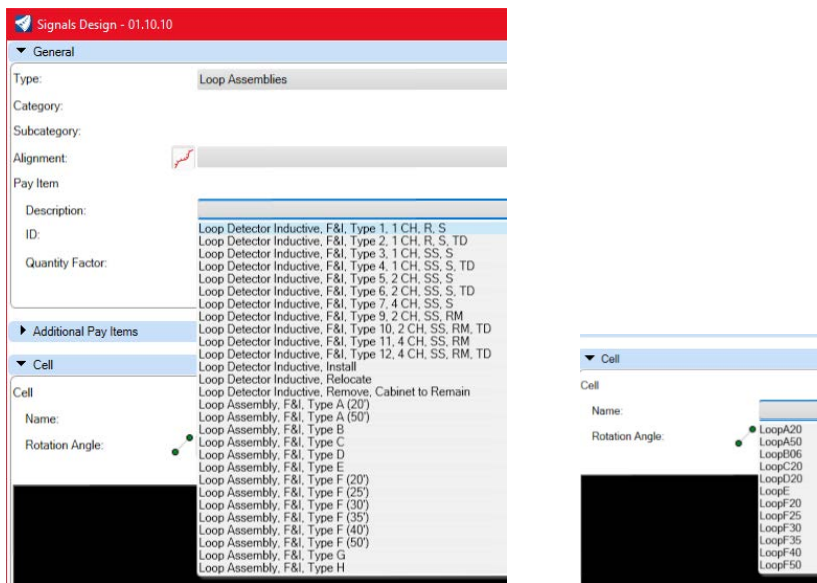
ELECTRIC SERVICE WIRE



INDUCTIVE LOOP DETECTORS



LOOP ASSEMBLIES



MAST ARM ASSEMBLIES

FURNISH & INSTALL

The screenshot displays the 'Signals Design - 01.10.10' interface. The 'General' tab is active, showing the following configuration:

- Type: Mast Arm Assemblies
- Category: Furnish & Install
- Subcategory: (blank)
- Alignment: (blank)
- Pay Item: Mast Arm Assembly, Furnish & Install, Single Arm 30'

The 'Additional Pay Items' list includes:

- Mast Arm Assembly, Furnish & Install, Single Arm 30'
- Mast Arm Assembly, Furnish & Install, Double Arm 30'-30'
- Mast Arm Assembly, Furnish & Install, Single Arm 40'
- Mast Arm Assembly, Furnish & Install, Double Arm 40'-40'
- Mast Arm Assembly, Furnish & Install, Single Arm 50'
- Mast Arm Assembly, Furnish & Install, Double Arm 50'-50'
- Mast Arm Assembly, Furnish & Install, Double Arm 50'-50'
- Mast Arm Assembly, Furnish & Install, Single Arm 60'
- Mast Arm Assembly, Furnish & Install, Double Arm 60'-30'
- Mast Arm Assembly, Furnish & Install, Double Arm 60'-40'
- Mast Arm Assembly, Furnish & Install, Double Arm 60'-50'
- Mast Arm Assembly, Furnish & Install, Double Arm 60'-60'
- Mast Arm Assembly, Furnish & Install, Single Arm 70'
- Mast Arm Assembly, Furnish & Install, Double Arm 70'-30'
- Mast Arm Assembly, Furnish & Install, Double Arm 70'-40'
- Mast Arm Assembly, Furnish & Install, Double Arm 70'-50'
- Mast Arm Assembly, Furnish & Install, Double Arm 70'-50'
- Mast Arm Assembly, Furnish & Install, Double Arm 70'-70'
- Mast Arm Assembly, Furnish & Install, Single Arm 78'
- Mast Arm Assembly, Furnish & Install, Double Arm 78'-30'
- Mast Arm Assembly, Furnish & Install, Double Arm 78'-40'
- Mast Arm Assembly, Furnish & Install, Double Arm 78'-50'
- Mast Arm Assembly, Furnish & Install, Double Arm 78'-60'
- Mast Arm Assembly, Furnish & Install, Double Arm 78'-70'
- Mast Arm Assembly, Furnish & Install, Double Arm 78'-78'

FURNISH & INSTALL EX FOUNDATION

The screenshot displays the 'Signals Design - 01.10.10' interface. The 'General' tab is active, showing the following configuration:

- Type: Mast Arm Assemblies
- Category: Furnish & Install Ex Foundation
- Subcategory: (blank)
- Alignment: (blank)
- Pay Item: Mast Arm Assembly, Furnish & Install on Existing Foundation, Single Arm 30'

The 'Additional Pay Items' list includes:

- Mast Arm Assembly, Furnish & Install on Existing Foundation, Single Arm 30'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 30'-30'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Single Arm 40'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 40'-40'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Single Arm 50'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 50'-30'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 50'-40'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 50'-50'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Single Arm 60'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 60'-30'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 60'-40'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 60'-50'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 60'-60'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Single Arm 70'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 70'-30'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 70'-40'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 70'-50'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 70'-70'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Single Arm 78'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 78'-30'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 78'-40'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 78'-50'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 78'-60'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 78'-70'
- Mast Arm Assembly, Furnish & Install on Existing Foundation, Double Arm 78'-78'
- Mast Arm Assembly, Install/Relocate to Existing Foundation
- Mast Arm Assembly, Install/Relocate to New/Contractor Provided Foundation

REPLACE ARM ON EXISTING POLE

Signals Design - 01.10.10

General

Type: Mast Arm Assemblies

Category: Replace Arm on Existing Pole

Subcategory:

Alignment:

Pay Item

Description: Mast Arm Assembly, Replace Arm on Existing Pole, 30' Single

ID:

Quantity Factor:

Mast Arm Assembly, Replace Arm on Existing Pole, 30' Single
Mast Arm Assembly, Replace Arm on Existing Pole, 40' Single
Mast Arm Assembly, Replace Arm on Existing Pole, 50' Single
Mast Arm Assembly, Replace Arm on Existing Pole, 60' Single
Mast Arm Assembly, Replace Arm on Existing Pole, 70' Single
Mast Arm Assembly, Replace Arm on Existing Pole, 78' Single

REMOVE

Signals

Controllers and Cabinet Traffic Signals Pedestrian Signals Loop Assemblies Pedestrian Detector Mast Arm Assemblies

General

Category: Remove

Subcategory:

Assembly Name:

Alignment:

Pay Item

Description: Mast Arm Assembly, Remove, Pole Only, Entire Foundation Remains

ID:

Mast Arm Assembly, Remove, Pole Only, Entire Foundation Remains
Mast Arm Assembly, Remove, Shallow Foundation, Bolt on Attachment
Mast Arm Assembly, Remove, Deep Foundation, Bolt on Attachment
Mast Arm Assembly, Remove, Remove Arm and Attachments, Pole Remains

MESSENGER WIRE

Signals Design - 01.10.10

General

Type: Messenger Wire

Category:

Subcategory:

Alignment:

Pay Item

Description:

ID: Messenger Wire, Furnish & Install, Replace Existing

PEDESTRIAN DETECTOR

Signals Design - 01.10.10

General

Type: Pedestrian Detector

Category:

Subcategory:

Alignment:

Pay Item

Description:

ID: Messenger Wire, Furnish & Install, Replace Existing
Pedestrian Detector, Furnish & Install, Standard
Pedestrian Detector, Furnish & Install, Accessible

Quantity Factor: PEDESTRIAN DETECTOR, FURNISH & INSTALL, STANDARD BUTTON WITH PASSIVE
PEDESTRIAN DETECTOR, FURNISH & INSTALL, ACCESSIBLE BUTTON WITH PASSIVE
PEDESTRIAN DETECTOR, F&I, RETROFIT PASSIVE TO EXISTING DETECTOR
Pedestrian Detector, Install
Pedestrian Detector, Relocate

Additional Pay Items

Pedestrian Detector, Adjust/Modify
Pedestrian Detector, Remove - Pole/Pedestal to Remain

PEDESTRIAN SIGNALS

Signals Design - 01.10.10

General

Type: Pedestrian Signals

Category:

Subcategory:

Alignment:

Pay Item

Description:

ID: Messenger Wire, Furnish & Install, Replace Existing
Pedestrian Detector, Furnish & Install, Standard
Pedestrian Detector, Furnish & Install, Accessible

Quantity Factor: PEDESTRIAN DETECTOR, FURNISH & INSTALL, STANDARD BUTTON WITH PASSIVE
PEDESTRIAN DETECTOR, FURNISH & INSTALL, ACCESSIBLE BUTTON WITH PASSIVE
PEDESTRIAN DETECTOR, F&I, RETROFIT PASSIVE TO EXISTING DETECTOR
Pedestrian Detector, Install
Pedestrian Detector, Relocate

Additional Pay Items

Pedestrian Detector, Adjust/Modify
Pedestrian Detector, Remove - Pole/Pedestal to Remain
Pedestrian Signal, Furnish & Install LED Countdown, 1 Way
Pedestrian Signal, Furnish & Install LED Countdown, 2 Ways
Pedestrian Signal, Relocate

Cell

Cell
Pedestrian Signal, Remove Pedestrian Signal - Pole/Pedestal to Remain

PRESTRESSED CONCRETE POLES

Signals Design - 01.10.10

General

Type: Prestressed Concrete Poles

Category:

Subcategory:

Alignment:

Pay Item

Description:

ID: Messenger Wire, Furnish & Install, Replace Existing
Pedestrian Detector, Furnish & Install, Standard
Pedestrian Detector, Furnish & Install, Accessible

Quantity Factor: PEDESTRIAN DETECTOR, FURNISH & INSTALL, STANDARD BUTTON WITH PASSIVE
PEDESTRIAN DETECTOR, FURNISH & INSTALL, ACCESSIBLE BUTTON WITH PASSIVE
PEDESTRIAN DETECTOR, F&I, RETROFIT PASSIVE TO EXISTING DETECTOR
Pedestrian Detector, Install
Pedestrian Detector, Relocate

Additional Pay Items

Pedestrian Detector, Adjust/Modify
Pedestrian Detector, Remove - Pole/Pedestal to Remain
Pedestrian Signal, Furnish & Install LED Countdown, 1 Way
Pedestrian Signal, Furnish & Install LED Countdown, 2 Ways

Cell

Cell
Pedestrian Signal, Relocate
Pedestrian Signal, Remove Pedestrian Signal - Pole/Pedestal to Remain
Prestressed Concrete Pole, F&I, Type P-II Pedestal
Prestressed Concrete Pole, F&I, Type P-II Service Pole
Prestressed Concrete Pole, F&I, Type P-III
Prestressed Concrete Pole, F&I, Type P-IV
Prestressed Concrete Pole, F&I, Type P-V
Prestressed Concrete Pole, F&I, Type P-VI
Prestressed Concrete Pole, F&I, Type P-VII
Prestressed Concrete Pole, F&I, Type P-VIII
Prestressed Concrete Pole, F&I, Custom Design
Prestressed Concrete Pole, Install
Prestressed Concrete Pole, Complete Pole Removal - Pedestal/Service Pole
Prestressed Concrete Pole, Shallow Pole Removal - Poles 30' and greater
Prestressed Concrete Pole, Complete Pole Removal - Poles 30' and greater
GUYING EXISTING CONCRETE STRAIN POLE

PULL AND JUNCTION BOXES

PULL AND JUNCTION BOXES

Signals Design - 01.10.10

General

Type: Pull and Junction Boxes

Category: Pull and Splice Boxes

Subcategory:

Alignment:

Pay Item

Description: Pull & Splice Box, F&I, 13" x 24" Cover Size

ID: Pull & Splice Box, F&I, 13" x 24" Cover Size
Pull & Splice Box, F&I, 24" x 36" Cover Size
Pull & Splice Box, F&I, 30" x 60" Rectangular or 36" Round Cover Size

Quantity Factor: PULL & SPLICE BOX, F&I, 17" X 30" COVER SIZE
PULL & SPLICE BOX, F&I, 30" X 48" COVER SIZE
Pull & Splice Box, Install
PULL & SPLICE BOX, REPAIR
PULL & SPLICE BOX, F&I, HS-20 FOR TPE, 54" X 54"
PULL & SPLICE BOX, F&I, TOLL SITE, 12" x 12"
PULL & SPLICE BOX, F&I, TOLL SITE, 24" x 36"
PULL & SPLICE BOX, F&I, TOLL SITE, 30" x 48"

Additional Pay Items

Signals Design - 01.10.10

General

Type: Pull and Junction Boxes

Category: Pull and Splice Boxes

Subcategory:

Alignment:

Pay Item

Description: Pull & Splice Box, F&I, 13" x 24" Cover Size

ID: Pull & Splice Box, F&I, 13" x 24" Cover Size
Pull & Splice Box, F&I, 24" x 36" Cover Size
Pull & Splice Box, F&I, 30" x 60" Rectangular or 36" Round Cover Size
PULL & SPLICE BOX, F&I, 17" X 30" COVER SIZE
PULL & SPLICE BOX, F&I, 30" X 48" COVER SIZE
Pull & Splice Box, Install
PULL & SPLICE BOX, REPAIR
PULL & SPLICE BOX, F&I, HS-20 FOR TPE, 54" X 54"
PULL & SPLICE BOX, F&I, TOLL SITE, 12" x 12"
PULL & SPLICE BOX, F&I, TOLL SITE, 24" x 36"
PULL & SPLICE BOX, F&I, TOLL SITE, 30" x 48"

Additional Pay Items

JUNCTION BOXES

Signals Design - 01.10.10

General

Type: Pull and Junction Boxes

Category: Junction Boxes

Subcategory:

Alignment:

Pay Item

Description: Junction Box, Furnish & Install, Aerial

ID: Junction Box, Furnish & Install, Aerial
Junction Box, Furnish & Install, Mounted
JUNCTION BOX, FURNISH & INSTALL, EMBEDDED
Junction Box, Relocate

SIGNAL HEAD AUXILIARIES

FURNISH & INSTALL

Signals Design - 01.10.10

General

Type: Signal Head Auxiliaries

Category: Furnish & Install

Subcategory:

Alignment:

Pay Item

Description: Vehicular Signal Auxiliaries, Repair/Replace/Retrofit, Furnish & Install, Backplate - Black with Retroreflective E

ID: Vehicular Signal Auxiliaries, Repair/Replace/Retrofit, Furnish & Install, Backplate - Black with Retroreflective Bords
Vehicular Signal Auxiliaries, Repair/Replace/Retrofit, Furnish & Install, Tunnel Visor
Vehicular Signal Auxiliaries, Repair/Replace/Retrofit, Furnish & Install, 12" LED Module - Standard
Vehicular Signal Auxiliaries, Repair/Replace/Retrofit, Furnish & Install, Add Section to Existing Signal Assembly
Vehicular Signal Auxiliaries, Repair/Replace/Retrofit, Furnish & Install, Backplate, Flexible Required

INSTALL

Signals Design - 01.10.10

General

Type: Signal Head Auxiliaries

Category: Install

Subcategory:

Alignment:

Pay Item

Description: Vehicular Signal Auxiliaries, Repair/Replace/Retrofit - Install, Back Plate - Black

ID: Vehicular Signal Auxiliaries, Repair/Replace/Retrofit - Install, Back Plate - Black
Vehicular Signal Auxiliaries, Repair/Replace/Retrofit - Install, Back Plate - Black with Retroreflective Border
Vehicular Signal Auxiliaries, Repair/Replace/Retrofit - Install, Tunnel Visor

Quantity Factor: Retrofit Existing Signal Head Auxiliaries, Install, 12" LED Module - Standard
Vehicular Signal Auxiliaries, Repair/Replace/Retrofit - Install, 8" LED Module - Emergency Signal
Vehicular Signal Auxiliaries, Repair/Replace/Retrofit - Install, Add Section to Existing Assembly

SIGNAL PRE-EMPTION

Signals Design - 01.10.10

General

Type: Signal Pre-Emption

Category:

Subcategory:

Alignment:

Pay Item

Description:

ID: Signal Priority and Preemption System, Furnish & Install, Optical, Cabinet Electronics
Signal Priority and Preemption System, Furnish & Install, Optical, Detector
Signal Priority and Preemption System, Furnish & Install, GPS, Cabinet Electronics
Signal Priority and Preemption System, Furnish & Install, GPS, Detector

Quantity Factor: Signal Priority and Preemption System, Relocate
Signal Priority and Preemption System, Adjust/Modify
Signal Priority and Preemption System, Remove

SPAN WIRE ASSEMBLIES

Signals Design - 01.10.04

General

Type: Span Wire Assemblies

Category: Furnish & Install

Subcategory:

Alignment:

Pay Item

Description: Span Wire Assembly, F&I, Single Point, Perpendicular

ID: Span Wire Assembly, F&I, Single Point, Perpendicular
Span Wire Assembly, F&I, Single Point, Diagonal
Span Wire Assembly, F&I, Single Point, Box or Drop Box
Span Wire Assembly, F&I, Single Point, Other Type
Span Wire Assembly, F&I, Two Point, Perpendicular
Span Wire Assembly, F&I, Two Point, Diagonal
Span Wire Assembly, F&I, Two Point, Box or Drop Box
Span Wire Assembly, F&I, Two Point, Other Type

Signals Design - 01.10.10

General

Type: Span Wire Assemblies

Category: Furnish & Install

Subcategory:

Alignment:

Pay Item

Description: Span Wire Assembly, F&I, Single Point, Perpendicular

ID: Span Wire Assembly, F&I, Single Point, Perpendicular
Span Wire Assembly, F&I, Single Point, Diagonal
Span Wire Assembly, F&I, Single Point, Box or Drop Box
Span Wire Assembly, F&I, Two Point, Perpendicular
Span Wire Assembly, F&I, Two Point, Diagonal
Span Wire Assembly, F&I, Two Point, Box or Drop Box
Span Wire Assembly, F&I, Two Point, Other Type

STRAIN POLES

WOOD STRAIN POLES

Signals Design - 01.10.10

General

Type: Strain Poles

Category: Wood Strain Poles

Subcategory:

Alignment:

Pay Item

Description: Strain Pole, Wood, Remove

ID: Strain Pole, Wood, Remove

STEEL STRAIN POLES

Signals Design - 01.10.10

General

Type: Strain Poles

Category: Steel Strain Poles

Subcategory:

Alignment:

Pay Item

Description: Steel Strain Pole, F&I, Pedestal

ID: Steel Strain Pole, F&I, Pedestal

Quantity Factor:

Additional Pay Items

- Steel Strain Pole, F&I, Pedestal
- Steel Strain Pole, F&I, Type PS-IV
- Steel Strain Pole, F&I, Type PS-V
- Steel Strain Pole, F&I, Type PS-VI
- Steel Strain Pole, F&I, Type PS-VII
- Steel Strain Pole, F&I, Type PS-VIII
- Steel Strain Pole, F&I, Type PS-IX
- Steel Strain Pole, F&I, Type PS-X
- Steel Strain Pole, Install
- Steel Strain Pole, Remove, Pedestal or Service Pole - Complete Removal
- Steel Strain Pole, Remove, Type PS Poles; Foundation Remains
- Steel Strain Pole, Remove, Shallow, Bolt on Attachment
- Steel Strain Pole, Remove, Deep, Bolt on Attachment

Cell

TRAFFIC SIGNALS

FURNISH & INSTALL - ALUMINUM

Signals Design - 01.10.10

General

Type: Traffic Signals

Category: Furnish & Install

Subcategory: Aluminum

Alignment:

Pay Item

Description: Traffic Signal, Furnish & Install, Aluminum, 1 Section, 1 Way

ID: Traffic Signal, Furnish & Install, Aluminum, 1 Section, 1 Way

Quantity Factor:

Additional Pay Items

- Traffic Signal, Furnish & Install, Aluminum, 1 Section, 1 Way
- Traffic Signal, Furnish & Install, Aluminum, 1 Section, 2 Way
- Traffic Signal, Furnish & Install, Aluminum, 1 Section, 3 Way
- Traffic Signal, Furnish & Install, Aluminum, 1 Section, 4 Way
- VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 2 SECTION, 1 WAY
- VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 2 SECTION, 2 WAY
- Traffic Signal, Furnish & Install, Aluminum, 3 Section, 1 Way
- Traffic Signal, Furnish & Install, Aluminum, 3 Section, 2 Way
- Traffic Signal, Furnish & Install, Aluminum, 3 Section, 3 Way
- Traffic Signal, Furnish & Install, Aluminum, 3 Section, 4 Way
- Traffic Signal, Furnish & Install, Aluminum, 4 Section, 1 Way
- Traffic Signal, Furnish & Install, Aluminum, 4 Section, 1 Way
- VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 4 SECTION, 2 WAY
- VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 4 SECTION, 3 WAY
- VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 4 SECTION, 4 WAY
- Traffic Signal, Furnish & Install, Aluminum, 5 Section Straight, 1 Way
- Traffic Signal, Furnish & Install, Aluminum, 5 Section Straight, 1 Way
- Traffic Signal, Furnish & Install, Aluminum, 5 Section Cluster, 1 Way

Cell


Name:

Rotation Angle:

FURNISH & INSTALL – POLYCARBONATE W/ ALUMINUM TOP

Signals Design - 01.10.10

General

Type: Traffic Signals
 Category: Furnish & Install
 Subcategory: Polycarbonate w/ Aluminum Top
 Alignment: 

Pay Item


Description: Traffic Signal, Furnish & Install, Polycarbonate w/ Aluminum Top Section, 1 Section, 1 Way
 ID: Traffic Signal, Furnish & Install, Polycarbonate w/ Aluminum Top Section, 1 Section, 1 Way
 Quantity Factor: Traffic Signal, Furnish & Install, Polycarbonate w/ Aluminum Top Section, 1 Section, 2 Way
 Traffic Signal, Furnish & Install, Polycarbonate w/ Aluminum Top Section, 1 Section, 3 Way
 Traffic Signal, Furnish & Install, Polycarbonate w/ Aluminum Top Section, 1 Section, 4 Way
 VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL POLYCARBONATE W/ALUM TOP, 2 SECTION, 1 WAY
 Traffic Signal, Furnish & Install, Polycarbonate w/ Aluminum Top Section, 1 Section, 2 Way
 Traffic Signal, Furnish & Install, Polycarbonate w/ Aluminum Top Section, 3 Section, 1 Way
 Traffic Signal, Furnish & Install, Polycarbonate w/ Aluminum Top Section, 3 Section, 1 Way
 Traffic Signal, Furnish & Install, Polycarbonate w/ Aluminum Top Section, 3 Section, 3 Way
 Traffic Signal, Furnish & Install, Polycarbonate w/ Aluminum Top Section, 3 Section, 4 Way
 Traffic Signal, Furnish & Install, Polycarbonate w/ Aluminum Top Section, 4 Section, 1 Way
 Traffic Signal, Furnish & Install, Polycarbonate w/ Aluminum Top Section, 4 Section, 1 Way
 VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL POLYCARBONATE W/ALUM TOP, 4 SECTION, 2 WAY
 VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL POLYCARBONATE W/ALUM TOP, 4 SECTION, 3 WAY
 VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL POLYCARBONATE W/ALUM TOP, 4 SECTION, 4 WAY
 Traffic Signal, Furnish & Install, Polycarbonate w/ Aluminum Top Section, 5 Section, 1 Way
 Traffic Signal, Furnish & Install, Polycarbonate w/ Aluminum Top Section, 5 Section, 1 Way
 Traffic Signal, Furnish & Install, Polycarbonate w/ Aluminum Top Section, 5 Section - Cluster, 1 Way

Additional Pay Items

Cell

Cell


Name:

Rotation Angle: 

FURNISH & INSTALL – POLYCARBONATE

Signals Design - 01.10.10

General

Type: Traffic Signals
 Category: Furnish & Install
 Subcategory: Polycarbonate
 Alignment: 

Pay Item


Description: VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 5/3 SECTION COMBINATION, 2 WAY
 ID: VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 5/3 SECTION COMBINATION, 2 WAY
 Quantity Factor: VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL POLYCARBONATE W/ALUM TOP, 5/3 SECTION COMBINATION, 2 WAY
 TRAFFIC SIGNAL, FURNISH & INSTALL POLYCARBONATE, 1 SECTION, 1 WAY
 Traffic Signal, Furnish & Install, Polycarbonate, 1 Section, 2 Way
 Traffic Signal, Furnish & Install, Polycarbonate, 1 Section, 3 Way
 Traffic Signal, Furnish & Install, Polycarbonate, 1 Section, 4 Way
 VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL POLYCARBONATE, 2 SECTION, 1 WAY
 VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL POLYCARBONATE, 2 SECTION, 2 WAY
 Traffic Signal, Furnish & Install, Polycarbonate, 3 Section, 1 Way
 Traffic Signal, Furnish & Install, Polycarbonate, 3 Section, 1 Way
 Traffic Signal, Furnish & Install, Polycarbonate, 3 Section, 2 Way
 Traffic Signal, Furnish & Install, Polycarbonate, 3 Section, 3 Way
 Traffic Signal, Furnish & Install, Polycarbonate, 3 Section, 4 Way
 Traffic Signal, Furnish & Install, Polycarbonate, 4 Section, 1 Way
 Traffic Signal, Furnish & Install, Polycarbonate, 4 Section, 1 Way
 VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL POLYCARBONATE, 4 SECTION, 2 WAY
 VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL POLYCARBONATE, 4 SECTION, 3 WAY
 VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL POLYCARBONATE, 4 SECTION, 4 WAY
 Traffic Signal, Furnish & Install, Polycarbonate, 5 Section, 1 Way
 Traffic Signal, Furnish & Install, Polycarbonate, 5 Section, 1 Way
 Traffic Signal, Furnish & Install, Polycarbonate, 5 Section - Cluster, 1 Way
 VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL PROGRAMMABLE, 5/3 SECTION COMBINATION, 2 WAY

Additional Pay Items

Cell

Cell

Name:

Rotation Angle: 

FURNISH & INSTALL – PROGRAMMABLE


Signals Design - 01.10.10

General

Type: Traffic Signals

Category: Furnish & Install

Subcategory: Programmable

Alignment: 

Pay Item

Description: Traffic Signal, Furnish & Install, Programmable, 1 Section, 1 Way

ID: Traffic Signal, Furnish & Install, Programmable, 1 Section, 1 Way
Traffic Signal, Furnish & Install, Programmable, 1 Section, 2 Way
Traffic Signal, Furnish & Install, Programmable, 1 Section, 3 Way


Quantity Factor: VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL PROGRAMMABLE, 2 SECTION, 1 WAY
VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL PROGRAMMABLE, 2 SECTION, 2 WAY
Traffic Signal, Furnish & Install, Programmable, 1 Section, 4 Way
Traffic Signal, Furnish & Install, Programmable, 3 Section, 1 Way
Traffic Signal, Furnish & Install, Programmable, 3 Section, 1 Way
Traffic Signal, Furnish & Install, Programmable, 3 Section, 2 Way
Traffic Signal, Furnish & Install, Programmable, 3 Section, 3 Way
Traffic Signal, Furnish & Install, Programmable, 3 Section, 4 Way
Traffic Signal, Furnish & Install, Programmable, 4 Section, 1 Way
Traffic Signal, Furnish & Install, Programmable, 4 Section, 1 Way
VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL PROGRAMMABLE, 4 SECTION, 2 WAY
VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL PROGRAMMABLE, 4 SECTION, 3 WAY
VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL PROGRAMMABLE, 4 SECTION, 4 WAY
Traffic Signal, Furnish & Install, Programmable, 5 Section, 1 Way
Traffic Signal, Furnish & Install, Programmable, 5 Section, 1 Way
Traffic Signal, Furnish & Install, Programmable, 5 Section - Cluster, 1 Way

Additional Pay Items

Cell

Cell

Name:

Rotation Angle: 

INSTALL


Signals Design - 01.10.10

General

Type: Traffic Signals

Category: Install

Subcategory:

Alignment: 

Pay Item

Description: Traffic Signal, Install (1 Section - 1 Way)

ID: Traffic Signal, Install (1 Section - 1 Way)
Traffic Signal, Install (1 Section - 2 Way)
Traffic Signal, Install (1 Section - 3 Way)

Quantity Factor: Traffic Signal, Install (1 Section - 4 Way)
Traffic Signal, Install (3 Section - 1 Way)
Traffic Signal, Install (3 Section - 1 Way - Horizontal)
Traffic Signal, Install (3 Section - 2 Way)
Traffic Signal, Install (3 Section - 3 Way)
Traffic Signal, Install (3 Section - 4 Way)
Traffic Signal, Install (4 Section - 1 Way)
Traffic Signal, Install (4 Section - 1 Way - Horizontal)
Traffic Signal, Install (5 Section - 1 Way)
Traffic Signal, Install (5 Section - 1 Way - Horizontal)
Traffic Signal, Install (5 Section - 1 Way - Vertical)
..
Traffic Signal, Install (5 Section - 2 Way)

Additional Pay Items

Cell

Cell

..

REMOVE

Signals Design - 01.10.10

General

Type: Traffic Signals
Category: Remove
Subcategory:
Alignment:
Pay Item

Description: Traffic Signal, Remove - Poles to Remain
ID: Traffic Signal, Remove - Poles to Remain
Quantity Factor: Traffic Signal, Remove (1 Section - 1 Way)
Traffic Signal, Remove (1 Section - 2 Way)
Traffic Signal, Remove (1 Section - 3 Way)
Traffic Signal, Remove (1 Section - 4 Way)
Traffic Signal, Remove (3 Section - 1 Way)
Traffic Signal, Remove (3 Section - 1 Way - Horizontal)
Traffic Signal, Remove (3 Section - 2 Way)
Traffic Signal, Remove (3 Section - 3 Way)
Traffic Signal, Remove (3 Section - 4 Way)
Traffic Signal, Remove (4 Section - 1 Way)
Traffic Signal, Remove (4 Section - 1 Way - Horizontal)
Traffic Signal, Remove (5 Section - 1 Way)
Traffic Signal, Remove (5 Section - 1 Way - Horizontal)
Traffic Signal, Remove (5 Section - 1 Way - Vertical)
Traffic Signal, Remove (5 Section - 2 Way)

Additional Pay Items
Cell
Name:

RELOCATE

Signals Design - 01.10.10

General

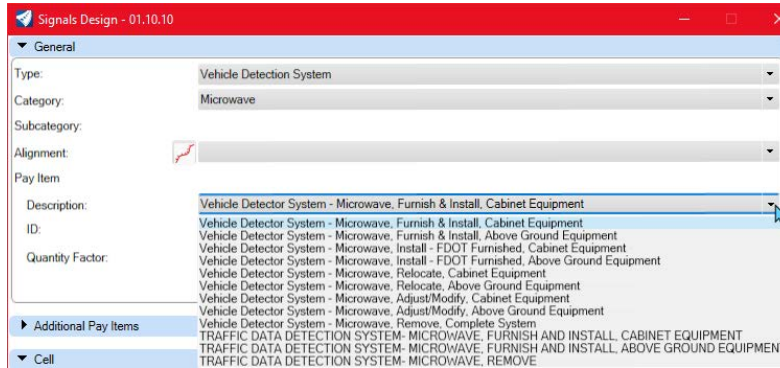
Type: Traffic Signals
Category: Relocate
Subcategory:
Alignment:
Pay Item

Description: Traffic Signal, Relocate - Includes Removal and Reinstallation
ID: Traffic Signal, Relocate - Includes Removal and Reinstallation
Quantity Factor: Traffic Signal, Relocate (1 Section - 1 Way)
Traffic Signal, Relocate (1 Section - 2 Way)
Traffic Signal, Relocate (1 Section - 3 Way)
Traffic Signal, Relocate (1 Section - 4 Way)
Traffic Signal, Relocate (3 Section - 1 Way)
Traffic Signal, Relocate (3 Section - 1 Way - Horizontal)
Traffic Signal, Relocate (3 Section - 2 Way)
Traffic Signal, Relocate (3 Section - 3 Way)
Traffic Signal, Relocate (3 Section - 4 Way)
Traffic Signal, Relocate (4 Section - 1 Way)
Traffic Signal, Relocate (4 Section - 1 Way - Horizontal)
Traffic Signal, Relocate (5 Section - 1 Way)
Traffic Signal, Relocate (5 Section - 1 Way - Horizontal)
Traffic Signal, Relocate (5 Section - 1 Way - Vertical)
Traffic Signal, Relocate (5 Section - 2 Way)
VEHICULAR TRAFFIC SIGNAL, ADJUST/MODIFY EXISTING SIGNAL

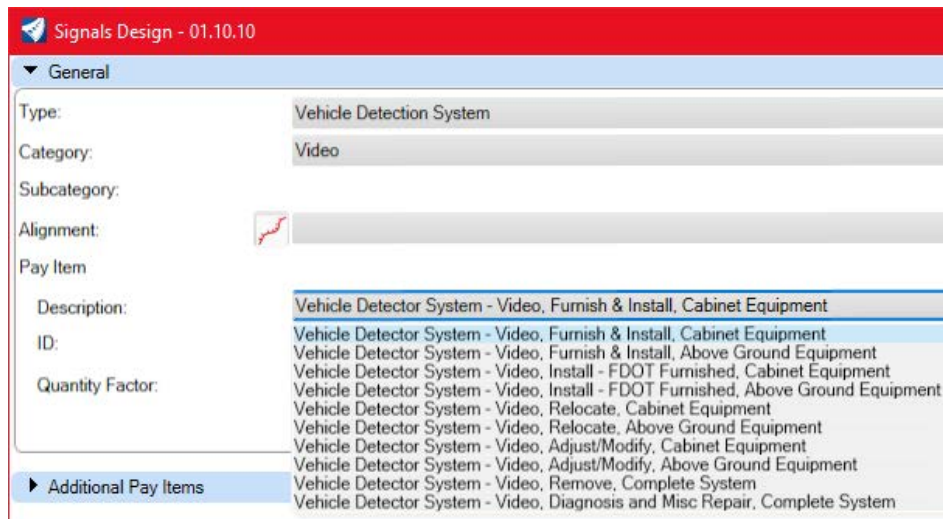
Additional Pay Items
Cell
Name:

VEHICLE DETECTION SYSTEM

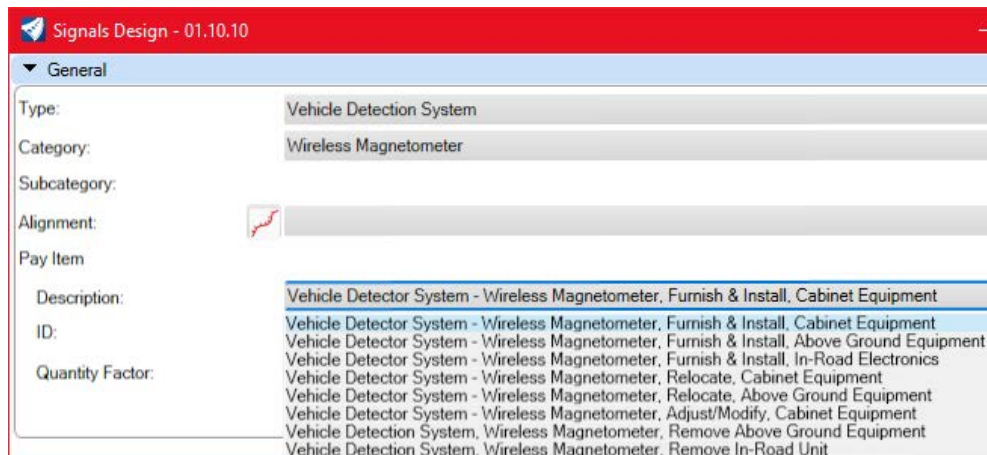
MICROWAVE



VIDEO



WIRELESS MAGNETOMETER



TRAFFIC DATA DETECTION SYSTEM


Signals Design - 01.10.10

General

Type: Vehicle Detection System

Category: Traffic Data Detection System

Subcategory:

Alignment: 

Pay Item

Description: TRAFFIC DATA DETECTION SYSTEM- VIDEO, FURNISH AND INSTALL, CABINET EQUIPMENT

ID: TRAFFIC DATA DETECTION SYSTEM- VIDEO, FURNISH AND INSTALL, CABINET EQUIPMENT
TRAFFIC DATA DETECTION SYSTEM- VIDEO, FURNISH AND INSTALL, ABOVE GROUND EQUIPMENT
TRAFFIC DATA DETECTION SYSTEM- VIDEO, INSTALL, CABINET EQUIPMENT
TRAFFIC DATA DETECTION SYSTEM- VIDEO, INSTALL, ABOVE GROUND EQUIPMENT
TRAFFIC DATA DETECTION SYSTEM- VIDEO, REMOVE

Quantity Factor:

AVI


Signals Design - 01.10.10

General

Type: Vehicle Detection System

Category: AVI

Subcategory:

Alignment: 

Pay Item

Description: Vehicle Detector System - AVI, Furnish & Install, Transponder, Cabinet Equipment

ID: Vehicle Detector System - AVI, Furnish & Install, Transponder, Cabinet Equipment
Vehicle Detector System - AVI, Furnish & Install, Transponder, Above Ground Equipment
Vehicle Detector System - AVI, Furnish & Install, Bluetooth, Cabinet Equipment
Vehicle Detector System - AVI, Furnish & Install, Bluetooth, Above Ground Equipment
Vehicle Detector System - AVI, Furnish & Install, License Plate, Cabinet Equipment
Vehicle Detector System - AVI, Furnish & Install, License Plate, Above Ground Equipment
Vehicle Detector System - AVI, Install - FDOT Furnished, Transponder, Cabinet Equipment
Vehicle Detector System - AVI, Install - FDOT Furnished, Transponder, Above Ground Equipment
Vehicle Detector System - AVI, Install - FDOT Furnished, Bluetooth, Cabinet Equipment
Vehicle Detector System - AVI, Install - FDOT Furnished, Bluetooth, Above Ground Equipment
Vehicle Detector System - AVI, Install - FDOT Furnished, License Plate, Cabinet Equipment
Vehicle Detector System - AVI, Install - FDOT Furnished, License Plate, Above Ground Equipment
Vehicle Detector System - AVI, Relocate, Transponder, Cabinet Equipment
Vehicle Detector System - AVI, Relocate, Transponder, Above Ground Equipment
Vehicle Detector System - AVI, Relocate, Bluetooth, Cabinet Equipment
Vehicle Detector System - AVI, Relocate, Bluetooth, Above Ground Equipment
Vehicle Detector System - AVI, Relocate, License Plate, Cabinet Equipment
Vehicle Detector System - AVI, Relocate, License Plate, Above Ground Equipment
Vehicle Detector System - AVI, Adjust/Modify, Transponder, Cabinet Equipment
Vehicle Detector System - AVI, Adjust/Modify, Transponder, Above Ground Equipment
Vehicle Detector System - AVI, Adjust/Modify, Bluetooth, Cabinet Equipment
Vehicle Detector System - AVI, Adjust/Modify, Bluetooth, Above Ground Equipment
Vehicle Detector System - AVI, Adjust/Modify, License Plate, Cabinet Equipment
Vehicle Detector System - AVI, Adjust/Modify, License Plate, Above Ground Equipment
Vehicle Detector System - AVI, Remove, Complete System
Vehicle Detector System - AVI, Diagnosis and Misc Repair, Complete System


Quantity Factor:

Additional Pay Items

Cell

Cell

Name:

Rotation Angle: 

WRONG WAY


Signals Design - 01.10.10

General

Type: Vehicle Detection System

Category: Wrong Way

Subcategory:

Alignment: 

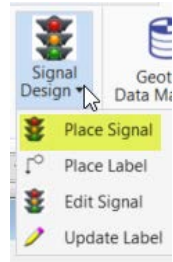
Pay Item

Description: VEHICLE DETECTION SYSTEM- WRONG WAY FOR EXIT RAMP, 3 OR MORE LANES, AC POWERED

ID: VEHICLE DETECTION SYSTEM- WRONG WAY FOR EXIT RAMP, 3 OR MORE LANES, AC POWERED
VEHICLE DETECTION SYSTEM- WRONG WAY FOR EXIT RAMP, 1 OR 2 LANES, AC POWERED
VEHICLE DETECTION SYSTEM- WRONG WAY FOR EXIT RAMP, 1 OR 2 LANES, SOLAR POWERED
VEHICLE DETECTION SYSTEM- WRONG WAY FOR EXIT RAMP, 3 OR MORE LANES, SOLAR POWERED

Quantity Factor:

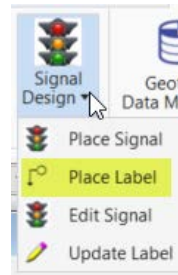
SIGNAL DESIGN PULL DOWN MENU



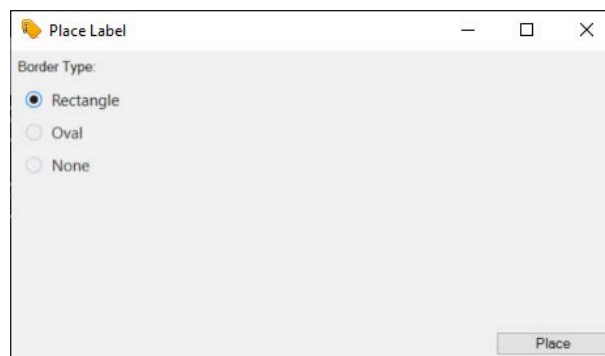
PLACE SIGNAL

Launches the Signal Design Dialog box, see above for detailed information

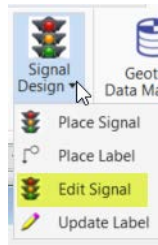
PLACE LABEL



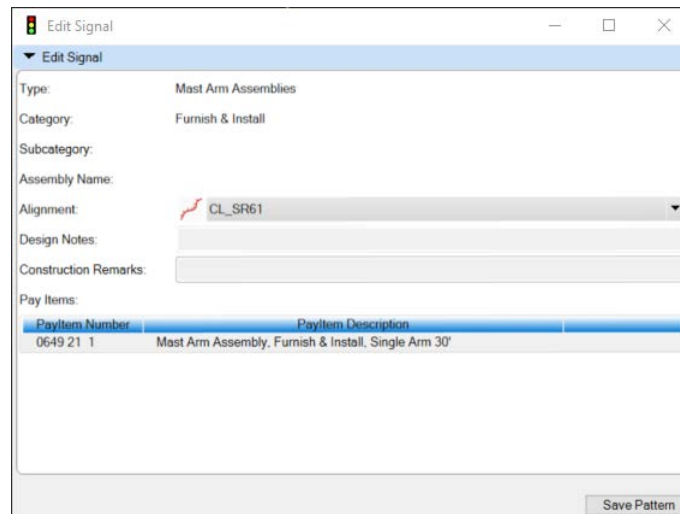
This launches the Place Label dialog. There must be a signal element placed in the file using the signal design process before using the place label command. Once the place label dialog is opened the options are whether there are shapes placed with the label or not. The label will place the pay item number (s) that are associated with the signal element. Once the Place button is selected you will need to select the signal element graphically in the design file that is to be labeled. The dialog is shown below.



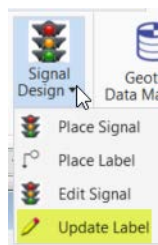
EDIT SIGNAL



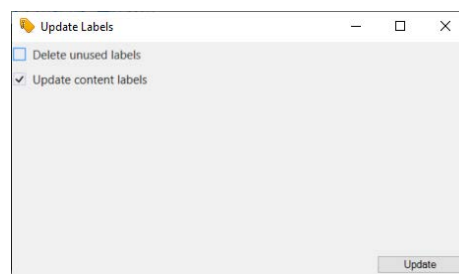
This launches the edit signal process, which will allow you to edit already placed signal elements that were placed using the signal design process. Once selected you will need to select the desired signal element that needs to be edited. The designer can add Design Notes and Construction Remarks. The PayItem Number section will display all the pay item data that is associated to the signal elements. The Save Pattern button will allow you to save the signal assembly as an xml file that you can recall later and place, this option is good for elements with multiple pay item numbers. The Dialog is shown below.



UPDATE LABEL



This launches the *Update Label* dialog. The Delete unused labels option for this dialog is to delete unused labels such as when you remove individual pay item elements and need to remove the label. The update content label option is for when you edit the signal element and need to update the label. The dialog is shown below.

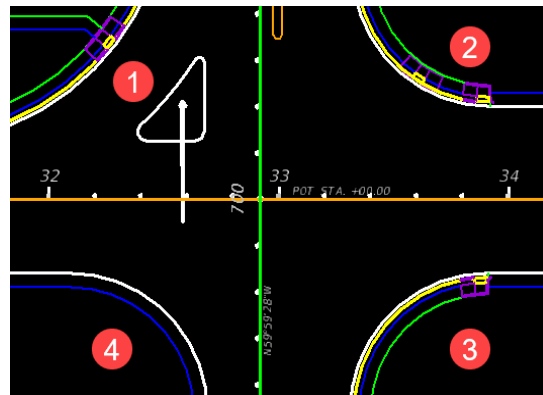



EXERCISE OVERVIEW

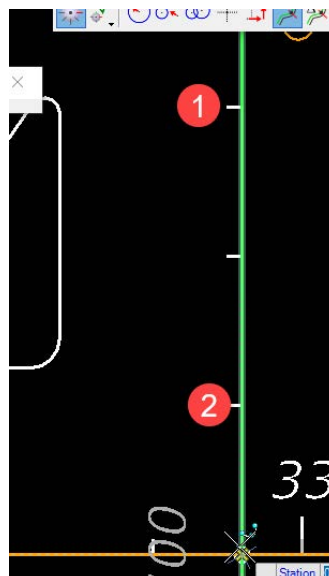
EXERCISE 5.1 *Placing a Mast Arm Assembly*

In this exercise the designer will place 4 Mast arm assemblies using the Signal Tool at 4 points in the intersection as shown below.

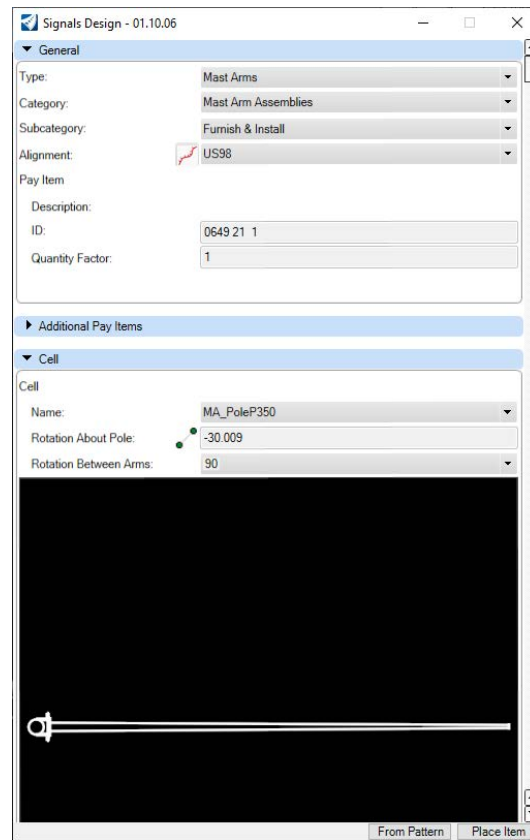
NOTE All design files were created in Chapter 1, refer to Chapter 1 if needed.



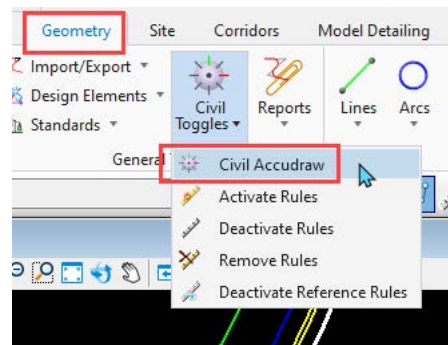
1. Open the DSGNSG01.dgn file in the Signal folder.
2. Click on the **Top half** of the signal icon.
3. For Type select **Mast Arms**.
4. For Category select **Mast Arm Assemblies**.
5. Using the alignment pulldown select **US98** as the alignment.
6. For Cell name select **MA_PoleP350**.
7. Pick the Rotation About Pole Button  and pick the following in the drawing using snaps along the alignment.



8. Your parameters should match below.



9. On the Geometry tab select **Civil Toggles** and select **Accudraw**.

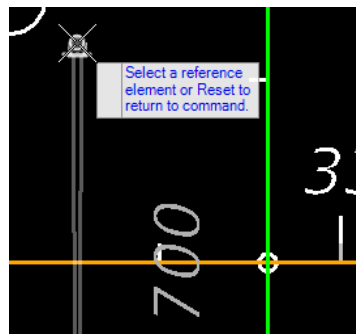


10. Select the **Station-Offset** on the accudraw toolbar.

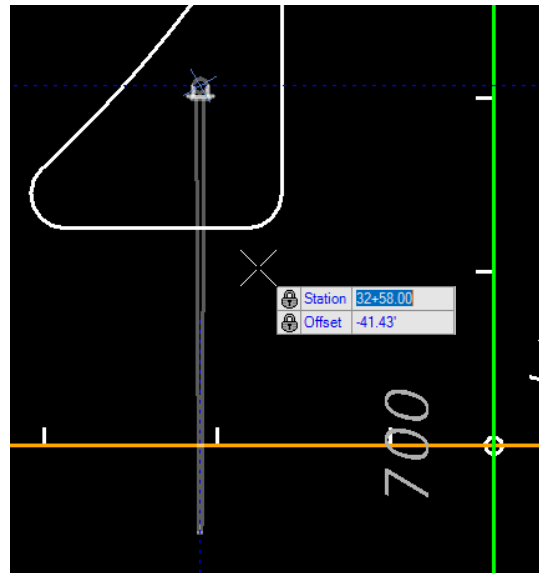


11. On the Signal tool select **Place Item**.

12. Type the letter **O** and select the **US98** alignment.

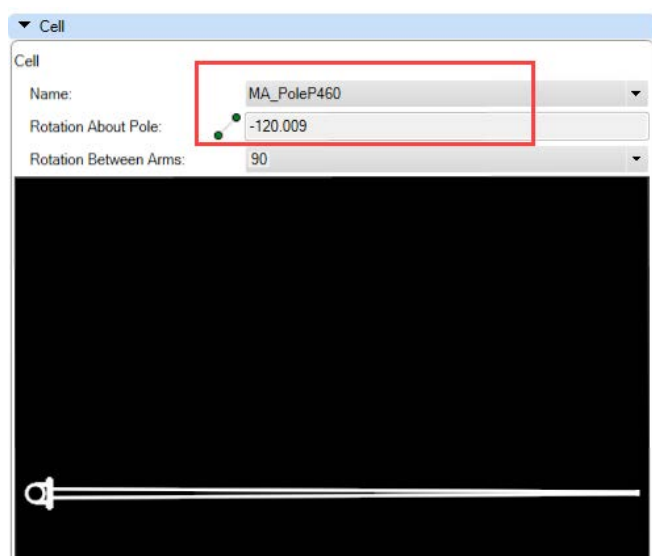


13. For Station type in **32+58**, press tab and type in **-41.43** for the offset. Notice the lock symbol appears when you select tab.



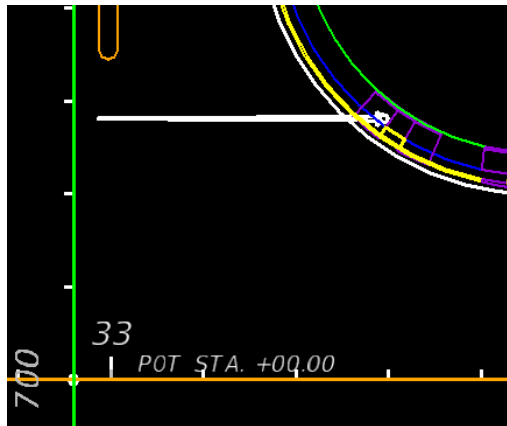
14. Notice the Mast arm locks into the selected position. **Left Click** to place the mast arm.

15. Set the following parameters to place the second mast arm.

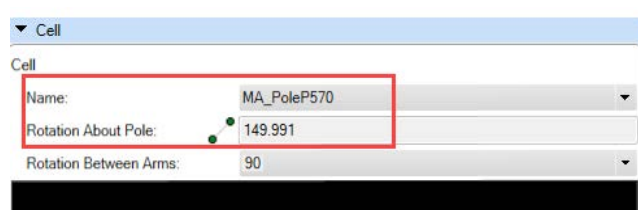


16. Select **Place Item**.

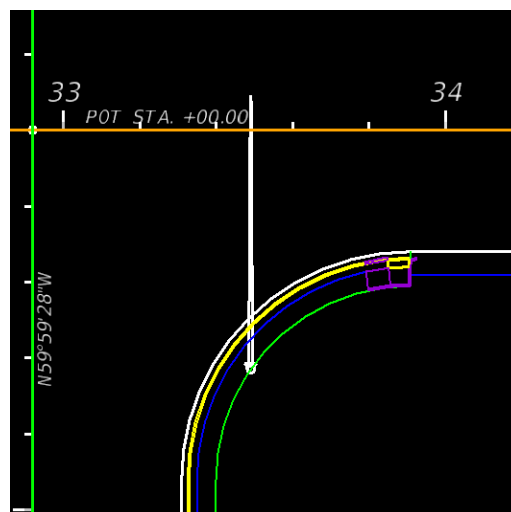
17. Type the letter **O** and then select the **US98** alignment.
18. In accudraw type in **33+59** for the station and **-56.28** for the offset.
19. **Left Click** to place the Mast Arm at the desired location.



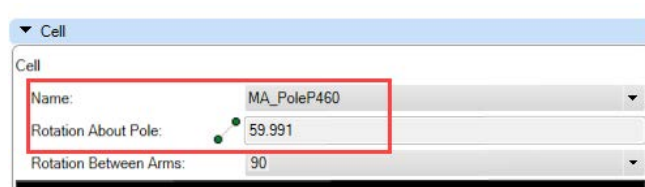
20. For **Mast Arm No. 3** match the following parameters.



21. Select **Place Item**.
22. Type the letter **O** and then select the **US98** alignment.
23. In accudraw type in **33+49** for the station and **63.02** for the offset.
24. **Left Click** to place the Mast Arm at the desired location.



25. For Mast Arm No. 4 match, the following parameters.

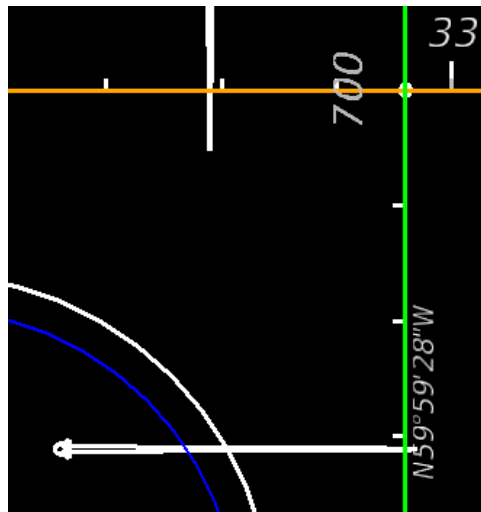


26. Select **Place Item**.

27. Type the letter **O** and then select the **US98** alignment.

28. In accudraw type in **32+32** for the station and **62.28** for the offset.

29. Left Click to place the Mast Arm at the desired location.



6

LIGHTING PLANS

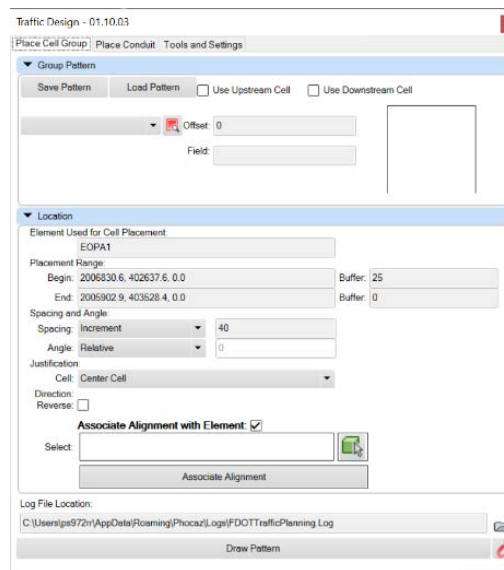
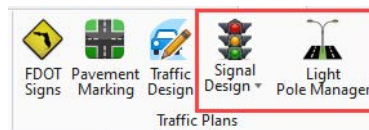
OBJECTIVE

The objective of this chapter is to provide an overview of tools that are within the Traffic Planning application that will allow you to place cells and to draw conduit to FDOT design standards for Lighting Plans. The normal workflow for creating Lighting Plans is to utilize pole placement from an AGI32 design. The designer will reference in the AGI file and place the light poles on top of the design, currently there is no automated workflow to convert the AGI poles to FDOT Light Poles.

INTRODUCTION

This chapter demonstrates the tools that are available within the traffic planning suite to aid in creating Lighting Plans.

Place Cell Group - An application within the FDOT WorkSpace that is used to place cells along an element, Light Poles, Control Boxes, and other cells related to Lighting Design. The application is located on the Traffic Plans panel on the FDOT Ribbon. An Overview of the dialog and its applications is below.



PLACE CELL GROUP

GROUP PATTERN

Save Pattern/Load Pattern – This function allows the designer to save a one, two, or three pattern cell(s), this is mainly used for painted pavement messages. The saved pattern contains the pay item data that it was created with, when recalled the designer can place the pattern without having to browse through the database.

Cell Selection with Preview – The default active cell is the center, the top and bottom contain toggle buttons to make them active also. The red button allows the designer to browse the database for the desired pattern. A preview window is supplied showing the selected cell. The designer must enter in an offset distance from the selected element. When the top and bottom cells are active there is an additional control that becomes active, the Upstream and Downstream spacing, which controls the distance (measured from center to center of cells) between the pavement messages.

LOCATION

Element Used for Cell Placement – This provides information on the source element used for cell placement.

Cell Placement Range – This provides information on the source element such as station values if element is an alignment. If it is not an alignment the information is the begin and end coordinates. The buffer controls allow the designer to place cells at any starting or end point along the source element.

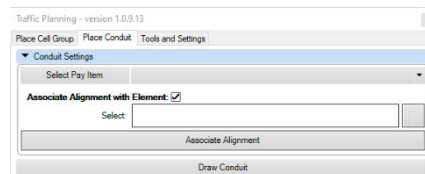
Spacing and Angle – The designer can control whether the cells can be placed once or incrementally along the source element. The angle control allows options of Relative, Absolute, and Perpendicular. If you change the spacing to increment the data box becomes active allowing the designer to enter a spacing distance for the cells, mostly used for RPM's.

Direction Reverse – This will reverse the selected elements direction, which effects how the cell rotates about the source element. If you find your cell is not rotating the direction you expect toggle this option on and the preview will change rotation of the cell in preview mode.

Associate Alignment with Element - When toggled it will place all patterns associated with the selected alignment. To select an alignment, click on the green selector button to pick your alignment. The alignment name will populate in the select text box. This is required so that your quantity reports will be accurate.

Draw Pattern – This starts the placement process, which will ask the designer for a source element to use as a reference line. When placing there is a preview of how the placement will look, if it is not right the designer can change parameters until the preview looks correct. Left click when you are ready to commit your cells to the drawing.

PLACE CONDUIT



This tool is used to draw conduit between cells, i.e. pull boxes. The designer selects from a list conduit. The Pay Item database controls these options and when drawn the symbology including the Pay Item number is correctly placed.

CONDUIT SETTINGS

Select Pay Item – When selected the pay item database opens allowing the designer to select the desired conduit. When selected the conduit type is listed next to the button.

Associate Alignment with Element - When toggled it will place all patterns associated with the selected alignment. To select an alignment, click on the green selector button to pick your alignment. The alignment name will populate in the select text box. This is required so that your quantity reports will be accurate.

Draw Conduit – When selected allows the designer to draw freeform in the design file using snaps.

TOOLS AND SETTINGS

This tool behaves like a find and replace, but only for pay item numbers. In the rare chance that the pay item number has changed or is incorrect the designer can type in the current number and the new value, and the number will be swapped out in the design file.

MODIFICATION

Current Value – This is the number you want replaced.

New Value – This is the number you want to use to replace the current value.

EXERCISE OVERVIEW


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EXERCISE 6.1 Placing Light Poles

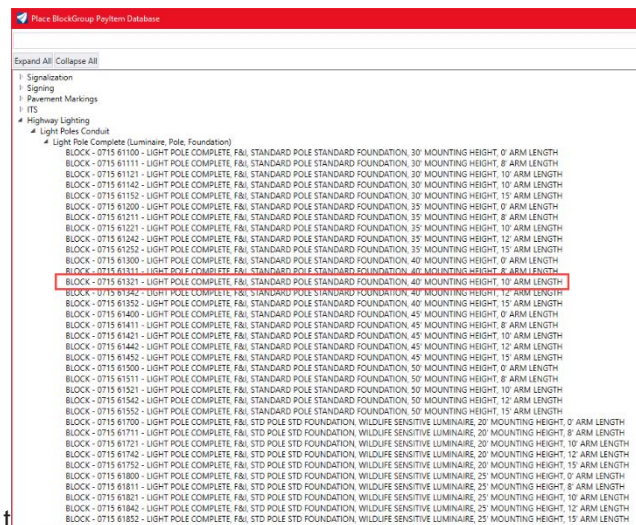
In this exercise the designer will place Light Poles using Place Cell Group on both sides of the Roadway.

NOTE All design files were created in Chapter 1, refer to Chapter 1 if needed.

1. Open the *DSGNLT01.dgn* file located in the Lighting folder within the Project.

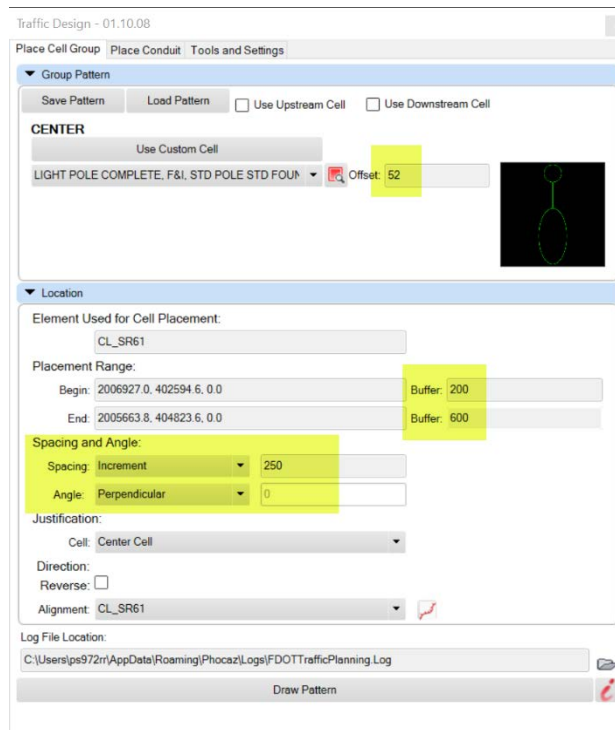
2. Open the **Traffic Planning** application located on the Traffic Plans Panel  and stay on the Place Cell Group tab.

3. Select the **Red** Browse button and browse to pay item **0715 61321 Light Pole Complete, F&I, Standard Pole Standard Foundation, 40' Mounting Height, 10' Arm Length**.



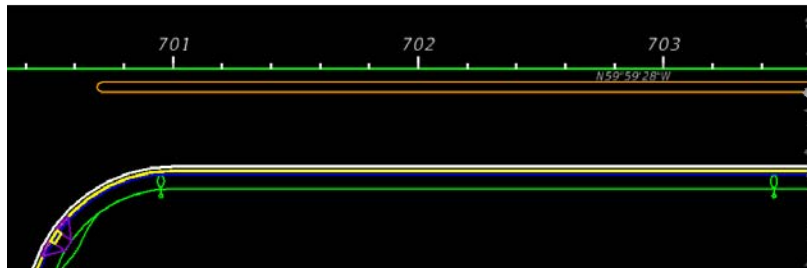
4. Set Offset to **52**.
5. Set the Begin Buffer to **200** and the End Buffer to **600**.
6. Set Spacing to **Increment**.
7. Set Angle to **Perpendicular**.
8. Make sure the Alignment is set to **CL_SR61**.

9. Match Image below.

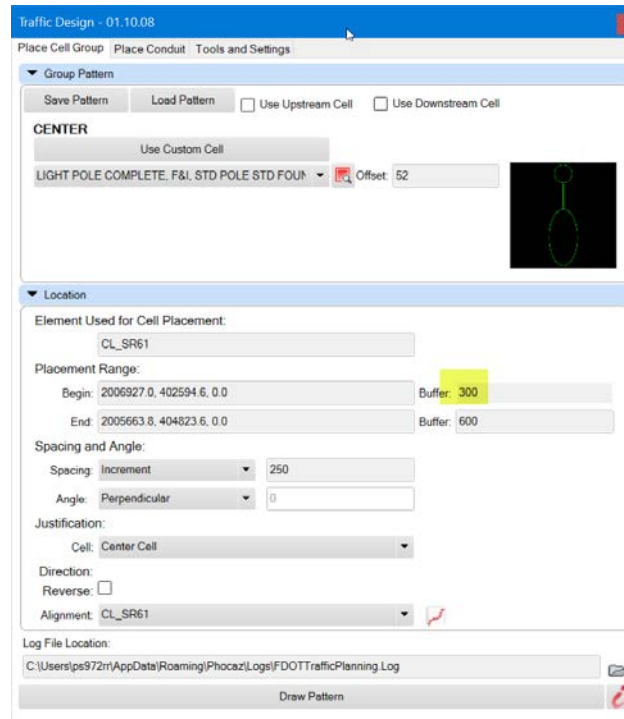


10. Select **Draw Pattern** and select the **Alignment**, notice the preview of the proposed Light Poles. You can adjust the criteria and the preview will update. Left Click on the bottom side of the Alignment to accept the preview.

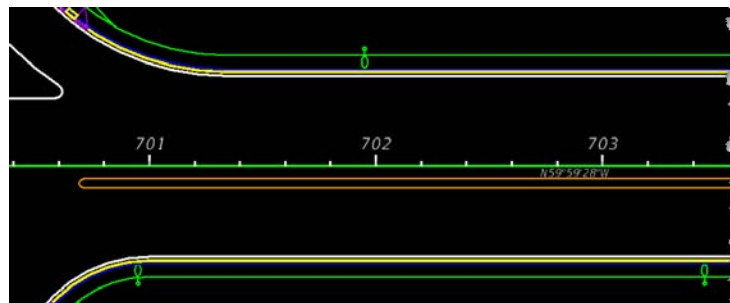
11. Your drawing should look like below.



- To place the Light Poles on the top side of the Roadway Make the following changes to the parameters. Change the Begin Buffer to 300 and leave the other selections unchanged.



- Select **Draw Pattern**, select the Alignment, Select the top side of the Roadway. Your drawing should look like below with the proper placements.



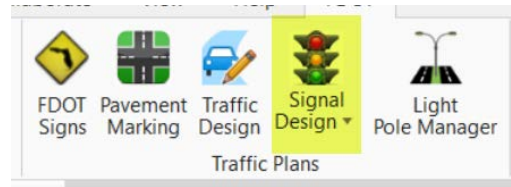
Place Cell Group places cells as ungrouped elements, meaning you can move individual Light Poles to avoid conflicts around sidewalks and driveways. If you look at the properties of one of the Light Poles, you will see a lot of data the user will need to fill in to generate a Pole Data Table. The user can enter in data either via properties or the Light Pole Manager application which will be discussed in detail in this manual.

PCGITLightPoles	
CircuitNo	
LoadCenterNo	
LuminVolts	
LuminWatts	
LuminAngle	
LuminTilt	
LuminMountingHeight	
LuminCCT	
LuminIES	
LuminLumens	
LuminMakeModel	
LuminType	
NoOfLuminaires	
ArmRise	
ArmLength	
Type	
MaintainingAgency	
Owner	
SetbackLocation	
StationLTRT	
Number	

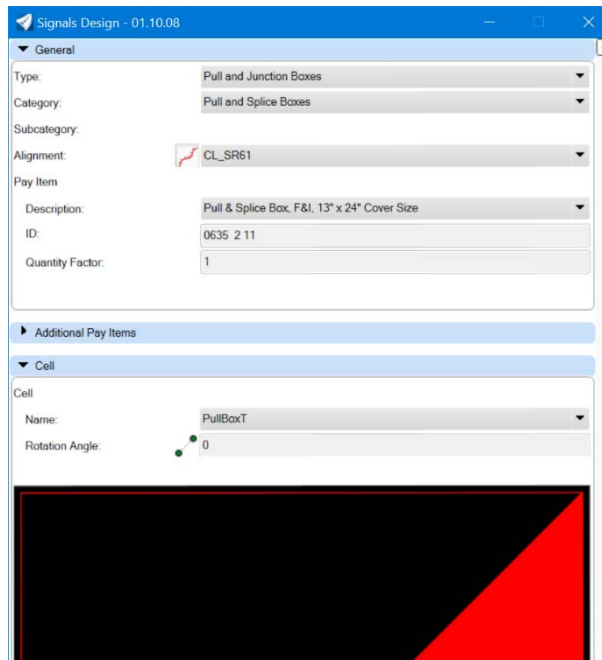
EXERCISE 6.2 *Placing Pull and Splice Boxes*

In this exercise the designer will place a Pull and Splice Box next to each Light Pole

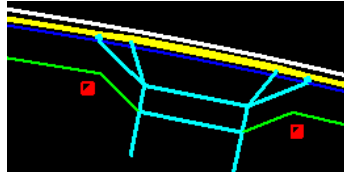
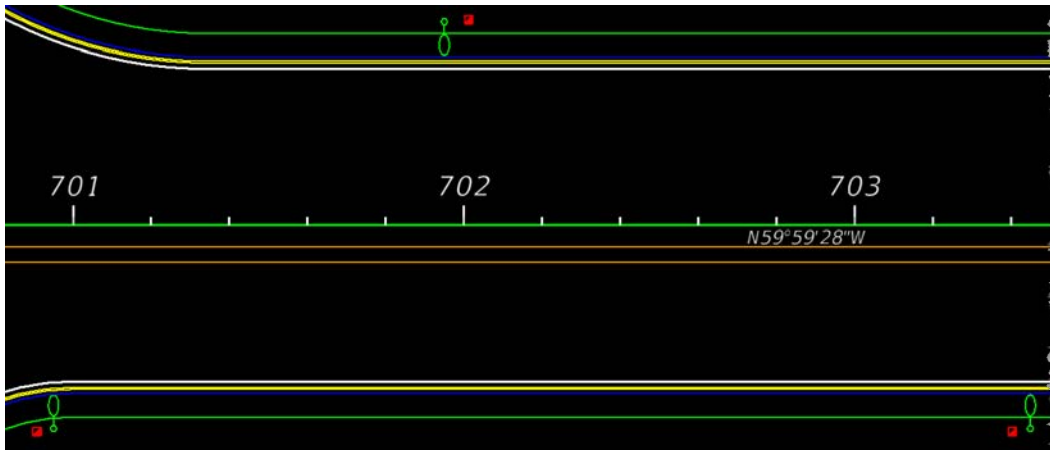
1. Continuing in the *DSGNLT01.dgn* file.
2. Open **Signal Design** application on the Traffic Plans panel.



3. For Type select **Pull and Junction Boxes**. Select Same for Category.
4. For Alignment select **CL_SR61**.
5. For description select **Pull & Splice Box, F&I, 13"x24" Cover Size**. Pay Item ID will populate with **0635 2 11**. The cell will auto populate with **PullBoxT** with a preview.



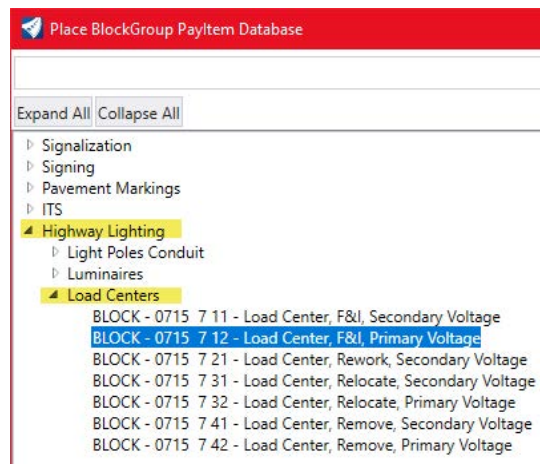
6. Select **Place Item** and manually Left Click to place the Splice box next to each Light Pole. Don't be concerned with the preview being large, when you left click to place, the normal sized cell will display.
7. Place 2 Splice Boxes at the proposed driveway. A portion of the drawing is shown below.



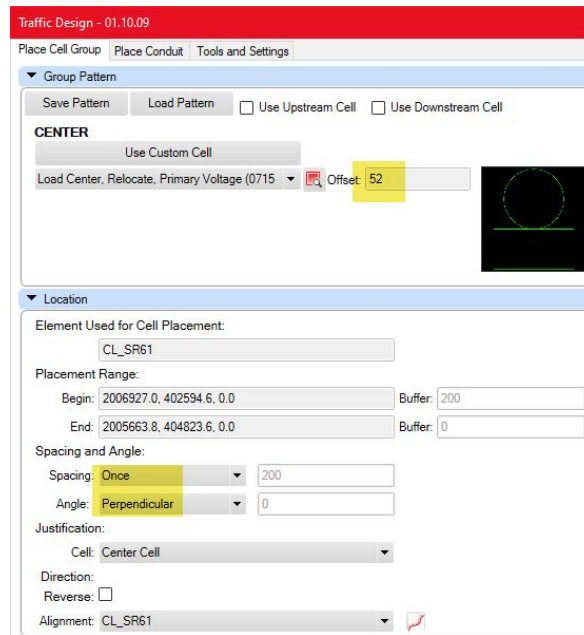
EXERCISE 6.3 *Placing a Load Center*

In this exercise the designer will use Place Cell Group to place a Load Center.

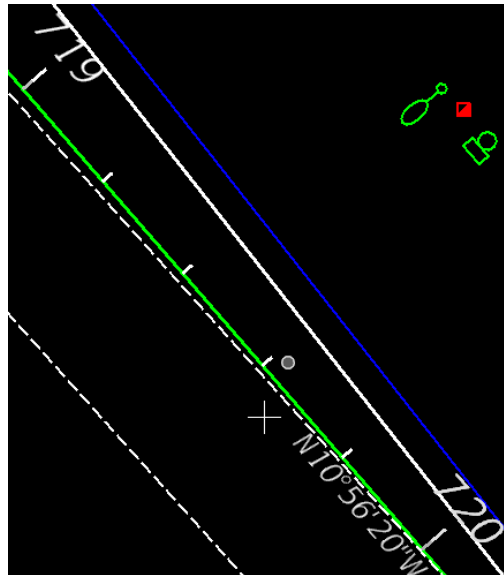
1. Continuing in the *DSGNLT01.dgn* file.
2. Open the **Traffic Planning** tool.
3. Select the Red Search button to open the Pay Item database, Expand **Highway Lighting** and **Load Centers**. Select Pay Item **0715 7 12 Load Center, F&I, Primary Voltage**. Click **OK**.



4. Match the following parameters shown below.



5. Place the Load Center Cell at the end of the project, see image below for location.



If you look at the properties of the Load Center, you will notice the properties that you can enter. The Number you designate for the Load Center can be entered via the properties or use the Light Pole Manager which will be covered in detail in this manual.

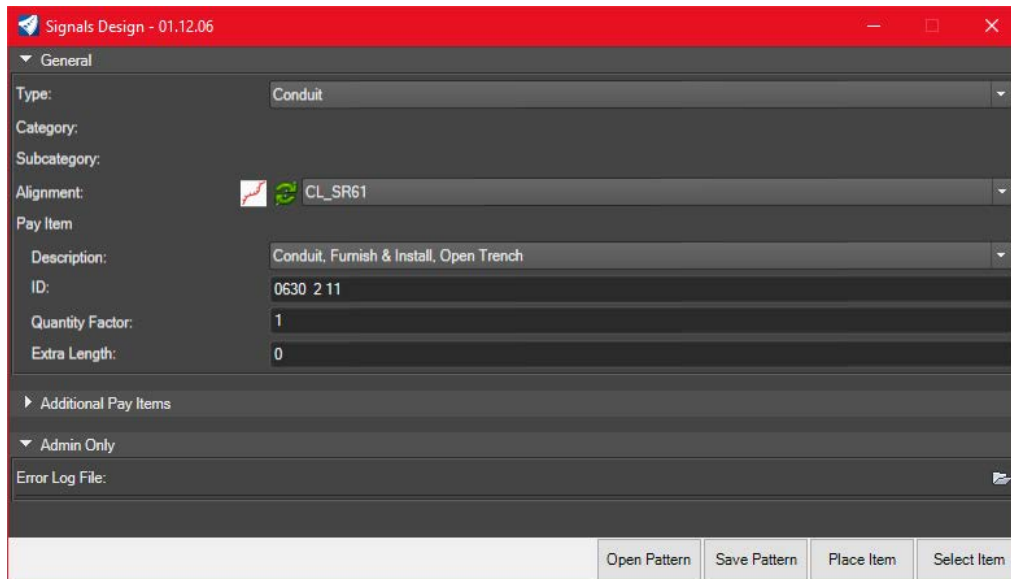
PCGIT	
PayItemNumber	0715 7 32
PayItemDescription	Load Center, Relocate, Primary Voltage
Alignment	CL_SR61
UnitOfMeasure	EA

PCGITLoadCenter	
Number	

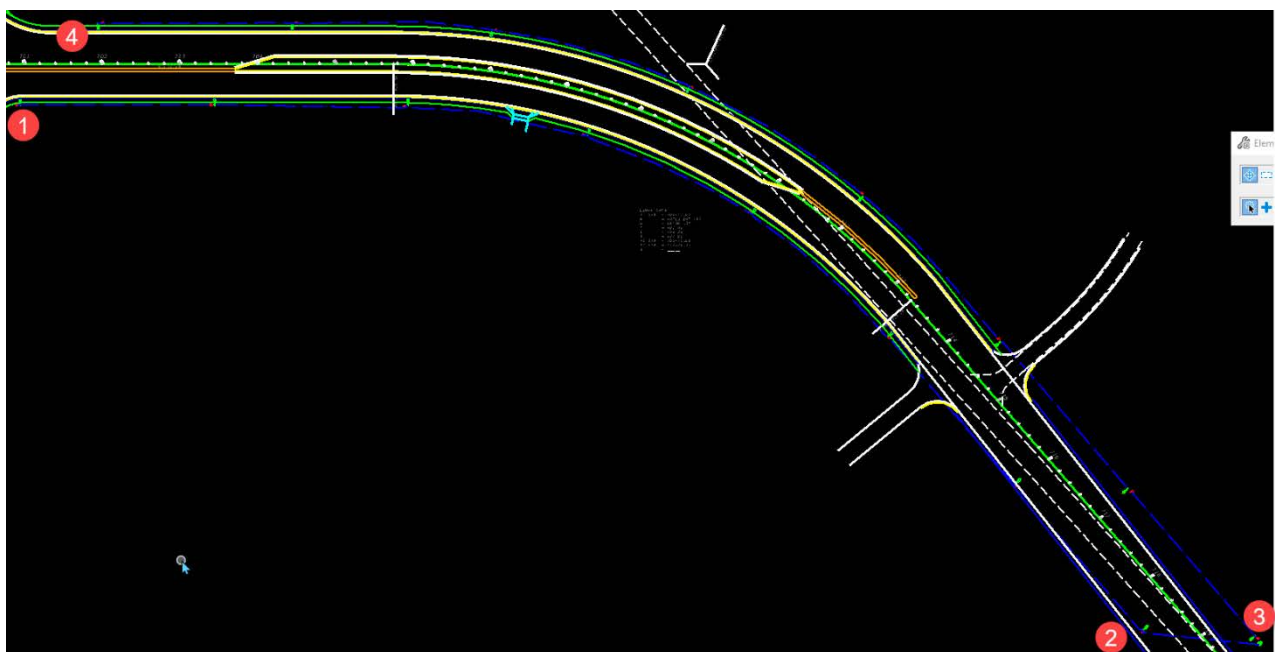
EXERCISE 6.4 Drawing Conduit

In this exercise the designer will draw conduit between light poles. The tool draws different types of conduits complete with the correct symbology including pay item numbers.

1. Continuing in the *DSGNLT01.dgn* file.
2. Open the **Signal Design** application and for Type Select **Conduit**.
3. Select the **CL_SR61** from the Alignment pulldown list.
4. For Description select **Conduit, Furnish & Install, Open Trench**.



5. Select **Place Item**.
6. Draw freeform to the points as shown below, left clicking at each point. You can draw with snaps also. As of this revision there is no freeform arc option so you will need to left click as you go around the curves. See image below for starting and ending points.

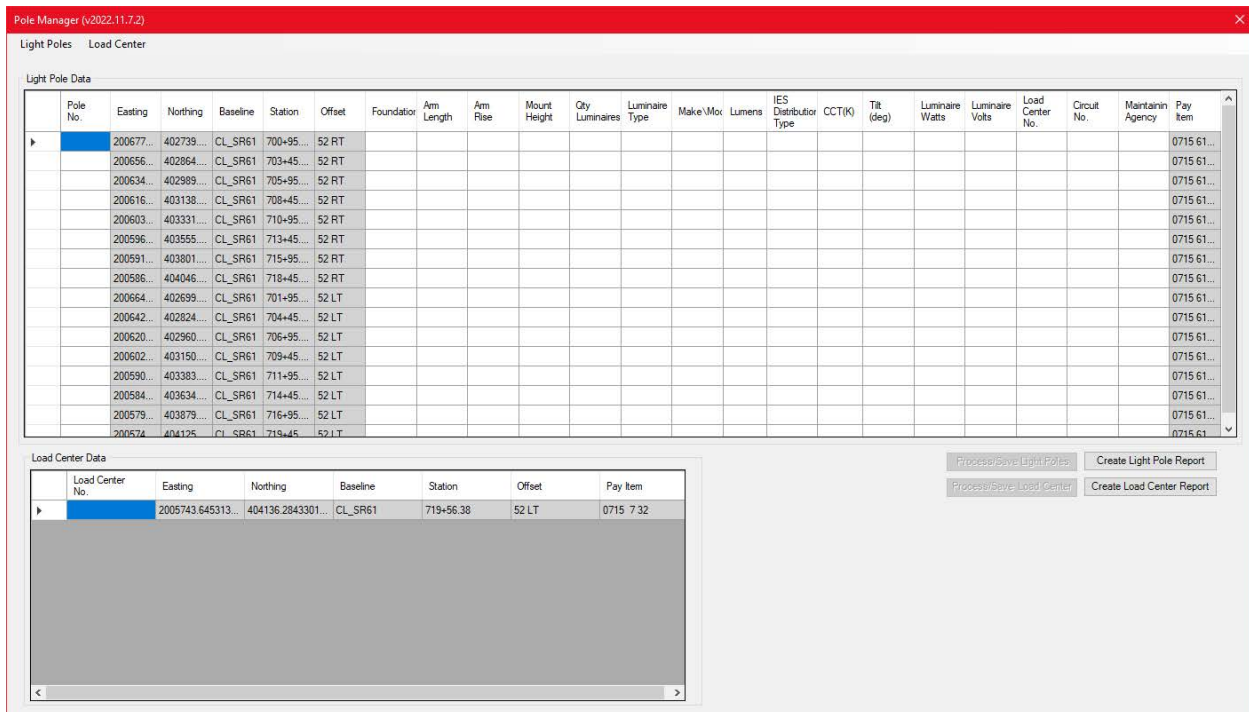


LIGHT POLE MANAGER

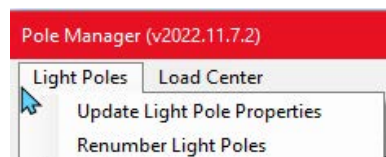


Light Pole Manager is an application that allows the designer to input required data on each Light Pole and Load Center that will be used to generate a table that can be linked to the design file. The advantage of all the data that can be added is it can be a part of a future assets management system.

NOTE The Light Pole Manager application will not launch **UNLESS** you have already placed Light Poles and/or Load Centers.



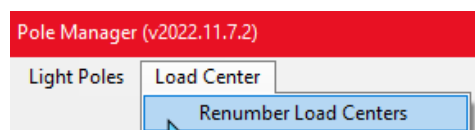
An overview of the options is discussed below.



LIGHT POLES

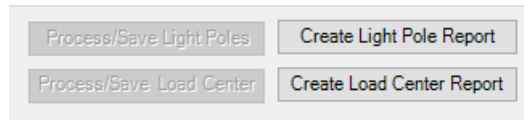
Update Light Poles – This function allows the designer to add data to each cell individually or all.

Renumber Light Poles – Allows the designer to assign a distinct number to the Light Poles or Re assign later. We are looking at creating a labeling function that will automatically update Pole Number labels when changed.



LOAD CENTER

Renumber Load Centers – Allows the designer to assign a distinct number to the Load Centers or Re assign later. We are looking at creating a labeling function that will automatically update Load Center labels when changed.



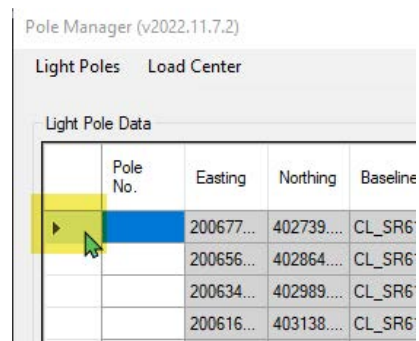
PROCESS/SAVE LIGHT POLES – PROCESS/SAVE LOAD CENTERS

When changes are made to the cells this option is active with dark text as a reminder to save your edits.

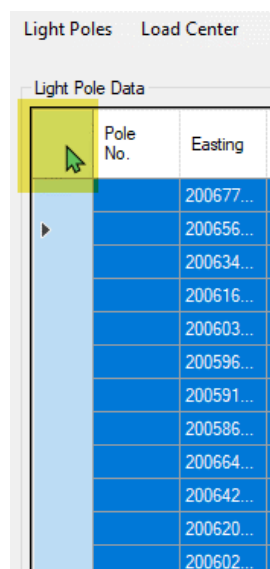
CREATE LIGHT POLE AND LOAD CENTER REPORT

When all data has been assigned to the cells you can generate reports that can then be linked to your design file.

You can zoom to an individual Light Pole or Load Center by double clicking as shown below.



You can select all rows by clicking as shown below.



You can select one at a time by pressing **Ctrl** and **Left clicking** on the desired rows.

	Pole No.	Easting	North
		200677...	4027...
		200656...	4028...
		200634...	4029...
		200616...	4031...
		200603...	4033...
		200596...	4035...
		200591...	4038...
		200586...	4040...
		200664...	4026...

NOTE The dark highlighted rows with data are automatically populated from the design file. The non-highlighted data cells require user input. You can always come back to enter additional data, so don't worry if you don't have all the data when you initially work with the manager.

Once you have highlighted rows you can **Right Click** and select **Update Light Pole Properties**. The Bulk Light Pole Data dialog box opens, to fill out data you will need to toggle on the data fields.

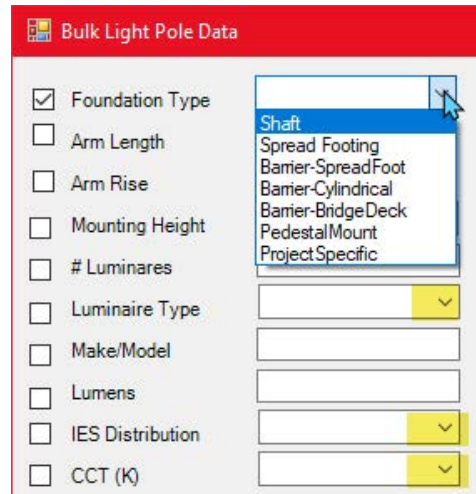
Bulk Light Pole Data

- Foundation Type
- Arm Length
- Arm Rise
- Mounting Height
- # Luminaires
- Luminaire Type
- Make/Model
- Lumens
- IES Distribution
- CCT (K)
- Tilt (deg)
- Luminaire Wattage
- Luminaire Voltage
- Load Center #
- Circuit #
- Maintaining Agency

Select All Select None

OK Cancel

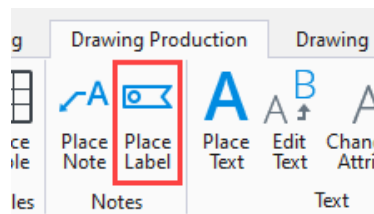
Notice that some of the fields have a down arrow, this means that there are preset choices that you pick from. The other fields are typed in. To assign a data field to every cell make sure you have selected all rows. Since each Light Pole has a unique number, you will need to manually enter an alpha numeric number for each. To identify which pole you are numbering you can move your cursor over the rows and the Light Pole(s) will highlight in the design file.



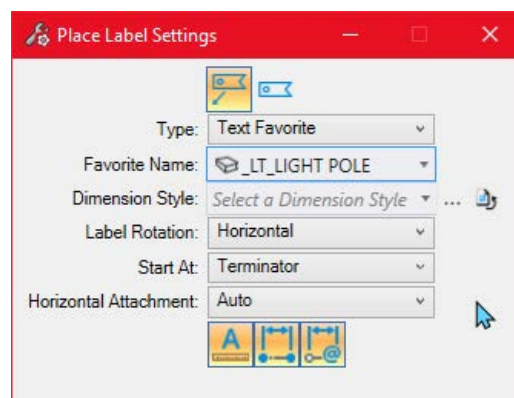
EXERCISE 6.5 Labeling Light Poles

In this exercise the designer will place labels for the Light Poles using an already created text favorite that will dynamically update if you modify the properties.

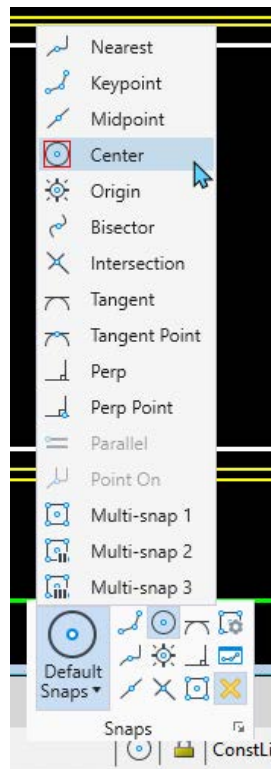
1. Continuing in the *DSGNLT01.dgn* file.
2. On the Drawing Production ribbon select **Place Text**.



3. For Type select **Text Favorite**. For Favorite Name select **_LT_LIGHT POLE**.

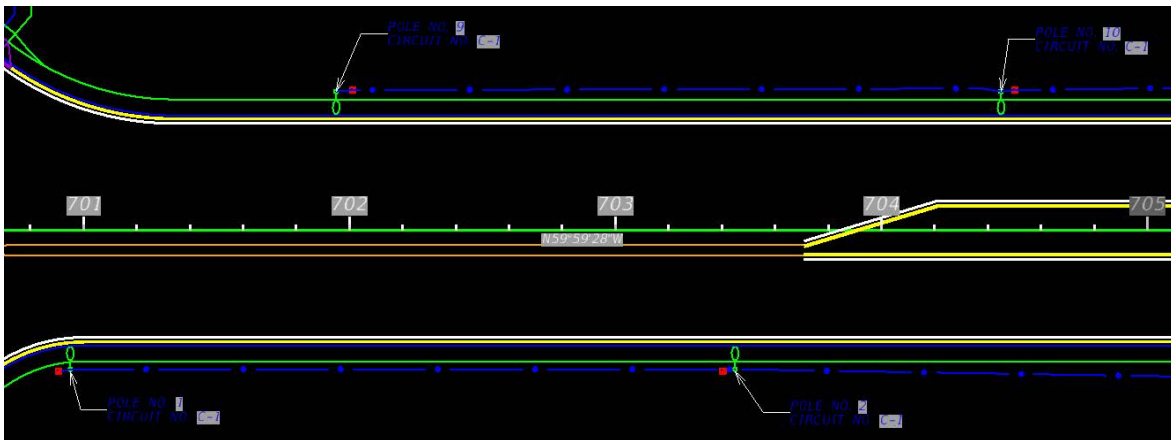


4. Set the default snap mode to Center.



5. Left click on the insertion point of the Light Pole (smallest circle), a label connects to that point allowing you to drag the label to a convenient location. Label each additional Light Pole, don't worry about the contents of the label as we will be editing the data via the Light Pole Manager.

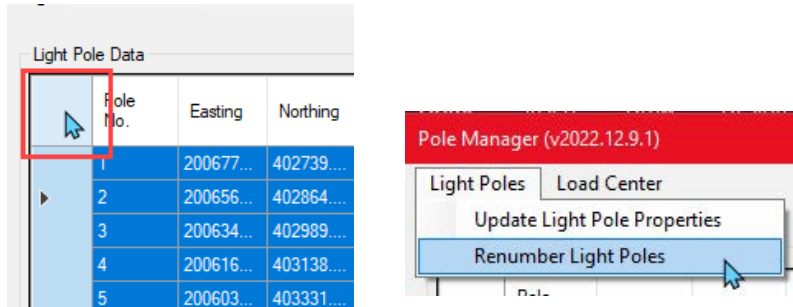
The shaded text in the label represents dynamic text, which will update as the properties are changed. This is very efficient when or if you must renumber the Light Poles.



EXERCISE 6.6 Numbering and Adding Properties to Light Poles

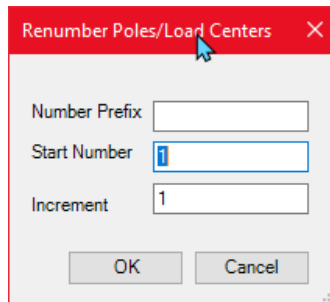
In this exercise, the designer will number each Light Pole that was placed in an earlier exercise.

1. Continuing in the *DSGNLT01.dgn* file.
2. Open the **Light Pole Manager** application, notice the application is processing the design file to find Light Poles and Load Centers.
3. Select all rows by clicking on the top left column. Right click and select **Renumber Light Poles**.



4. The renumber poles/load centers dialog opens, the default start number and increment are set to 1. If needed, you can add an alpha numeric prefix.

Notice how the right side of the road is numbered 1-8 and the left side is numbered 9-16.

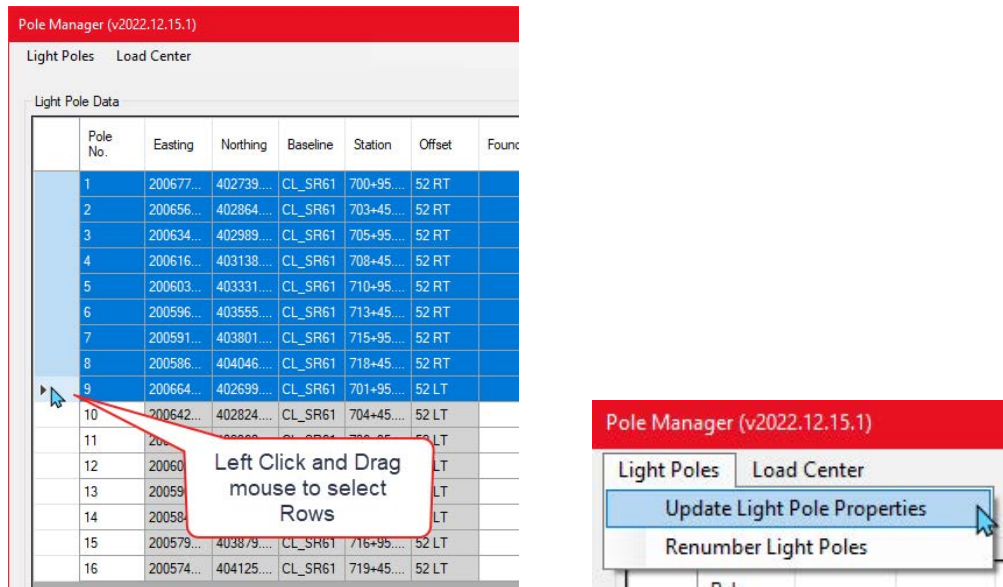


5. Select **OK** see the result below.

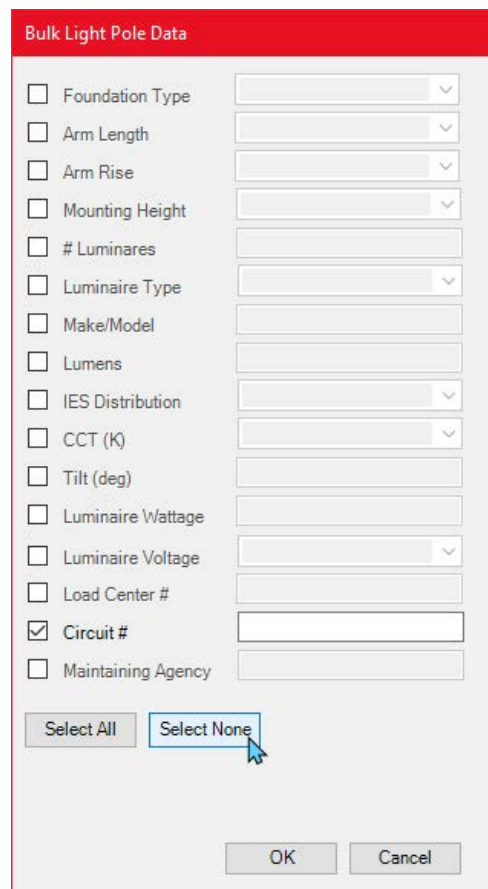
The screenshot shows the 'Light Pole Data' table with columns 'Pole No.' and 'Easting'. The table now contains 16 rows, numbered 1 through 16, with corresponding Easting values.

Pole No.	Easting
1	200677...
2	200656...
3	200634...
4	200616...
5	200603...
6	200596...
7	200591...
8	200586...
9	200664...
10	200642...
11	200620...
12	200602...
13	200590...
14	200584...
15	200579...
16	200574...

- Highlight rows 1-9 and select **Update Light Pole Properties**.



- On the Bulk Light Pole Data dialog box click on **Select None**, which will clear all boxes. Toggle on **Circuit #**. Notice how the data box darkens for editing.

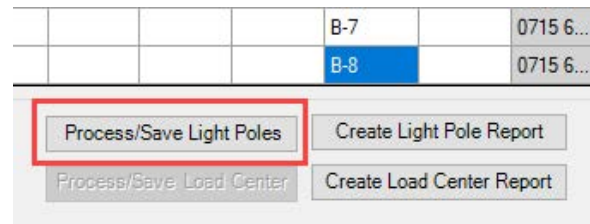


- Type in **A-1** and click **OK**.

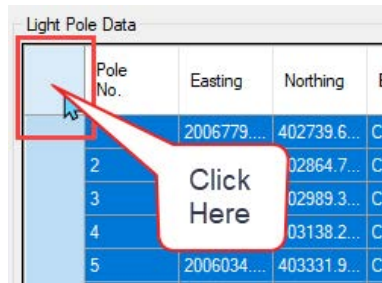
- Repeat the previous steps with Light Poles 9-16 and for Circuit Number enter **B-1**. See image below for finished result.

Pole No.	Easting	Northing	Baseline	Station	Offset	Foundation	Am Length	Am Rise	Mount Height	Qty Luminaires	Luminaire Type	Make/Model	Lumens	IES Distributor Type	CCT(K)	Tilt (deg)	Luminaire Watts	Luminaire Volts	Load Center No.	Circuit No.	Maintain Agency
1	200677...	402739...	CL_SR61	700+95...	52 RT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	A-1	FDOT
2	200656...	402864...	CL_SR61	703+45...	52 RT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	A-1	FDOT
3	200634...	402989...	CL_SR61	705+95...	52 RT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	A-1	FDOT
4	200616...	403138...	CL_SR61	708+45...	52 RT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	A-1	FDOT
5	200603...	403331...	CL_SR61	710+95...	52 RT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	A-1	FDOT
6	200596...	403555...	CL_SR61	713+45...	52 RT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	A-1	FDOT
7	200591...	403801...	CL_SR61	715+95...	52 RT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	A-1	FDOT
8	200586...	404046...	CL_SR61	718+45...	52 RT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	A-1	FDOT
9	200664...	402699...	CL_SR61	701+95...	52 LT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	B-1	FDOT
10	200642...	402824...	CL_SR61	704+45...	52 LT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	B-1	FDOT
11	200620...	402960...	CL_SR61	706+95...	52 LT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	B-1	FDOT
12	200602...	403150...	CL_SR61	709+45...	52 LT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	B-1	FDOT
13	200590...	403383...	CL_SR61	711+95...	52 LT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	B-1	FDOT
14	200584...	403634...	CL_SR61	714+45...	52 LT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	B-1	FDOT
15	200579...	403879...	CL_SR61	716+95...	52 LT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	B-1	FDOT
16	200574...	404125...	CL_SR61	719+45...	52 LT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	B-1	FDOT

- Periodically select **Process/Save Light Poles** to save the data you have entered. Another function that happens when you Process/Save Light Poles is the labels you placed earlier update with the new Pole Number and Circuit Number.



- Now that the Label specific data has been entered, the rest will be faster. Select all the rows.



12. Enter in the following data, make sure you toggle all on except for Circuit #.

13. Select **OK** to add the data to the Light Poles. See image for reference.

Pole No.	Easting	Northing	Baseline	Station	Offset	Foundation	Arm Length	Arm Rise	Mount Height	Qty Luminaires	Luminaire Type	Make/Model	Lumens	IES Distributor Type	CCT(K)	Tilt (deg)	Luminaire Watts	Luminaire Volts	Load Center No.	Circuit No.	Maintain Agency	Pay Item
1	200677...	402739...	CL_SR61	700+95...	52 RT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	A-1	FDOT	0715 61...
2	200656...	402864...	CL_SR61	703+45...	52 RT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	A-2	FDOT	0715 61...
3	200634...	402989...	CL_SR61	705+95...	52 RT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	A-3	FDOT	0715 61...
4	200616...	403138...	CL_SR61	708+45...	52 RT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	A-4	FDOT	0715 61...
5	200503...	403331...	CL_SR61	710+95...	52 RT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	A-5	FDOT	0715 61...
6	200596...	403555...	CL_SR61	713+45...	52 RT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	A-6	FDOT	0715 61...
7	200591...	403801...	CL_SR61	715+95...	52 RT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	A-7	FDOT	0715 61...
8	200586...	404046...	CL_SR61	718+45...	52 RT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	A-8	FDOT	0715 61...
9	200664...	402699...	CL_SR61	701+95...	52 LT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	B-1	FDOT	0715 61...
10	200642...	402824...	CL_SR61	704+45...	52 LT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	B-2	FDOT	0715 61...
11	200620...	402960...	CL_SR61	706+95...	52 LT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	B-3	FDOT	0715 61...
12	200602...	403150...	CL_SR61	709+45...	52 LT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	B-4	FDOT	0715 61...
13	200590...	403383...	CL_SR61	711+95...	52 LT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	B-5	FDOT	0715 61...
14	200584...	403634...	CL_SR61	714+45...	52 LT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	B-6	FDOT	0715 61...
15	200579...	403879...	CL_SR61	716+95...	52 LT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	B-7	FDOT	0715 61...
16	200574...	404125...	CL_SR61	719+45...	52 LT		10'	3'	40'	1	Convert...	LED Co...	15000	2	3000	5	250	480	A	B-8	FDOT	0715 61...

14. While the Pole Manager dialog is open name the Load Center "A"

Load Center No.	Easting	Northing	Baseline	Station	Offset	Pay Item
A	2005743.6453...	404136.28433...	CL_SR61	719+56.38	52 LT	0715 732

Looking at the properties of one of the Light Poles, you can also edit or add information and the next time the Light Pole Manager dialog is open your edits will be automatically added to the list.

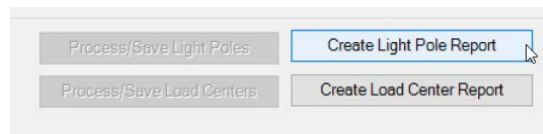
PCGIT	
PayItemNumber	0715 61852
PayItemDescription	LIGHT POLE COMPLETE, F&I, STD POLE STD FC
Alignment	CL_SR61
UnitOfMeasure	EA

PCGITLightPoles	
CircuitNo	A-1
LoadCenterNo	A
LuminVolts	480
LuminWatts	250
LuminAngle	
LuminTilt	5
LuminMountingHeight	40'
LuminCCT	3000
LuminIES	2
LuminLumens	15000
LuminMakeModel	LED Cobrahead
LuminType	Conventional
NoOfLuminaires	1
ArmRise	3'
ArmLength	10'
Type	
MaintainingAgency	FDOT
Owner	
SetbackLocation	
StationLTRT	
Number	01

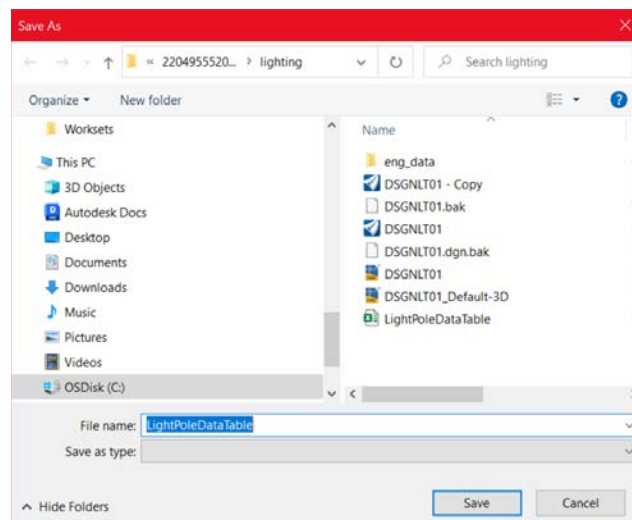
EXERCISE 6.7 Creating a Light Pole Report

In this exercise you will create a Light Pole and Load Center Report that can be linked into your design file using **Place Table** located on the Drawing Production Ribbon.

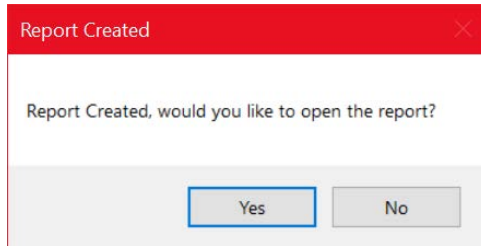
1. Continuing in the *DSGNLT01.dgn* file.
2. Open the **Light Pole Manager** application if not open.
3. Select **Create Light Pole Report**.



4. The Save as dialog opens, the default location is the Lighting folder within your project. The default name of the report is LightPoleDataTable. Click **Save**.



- After saving the report a dialog asking if you would like to open the report in excel pops up. The excel file is shown below. If you create a new report a dialog will pop up asking if you want to overwrite the previous report, if you need multiple reports, you can assign a different name to each.



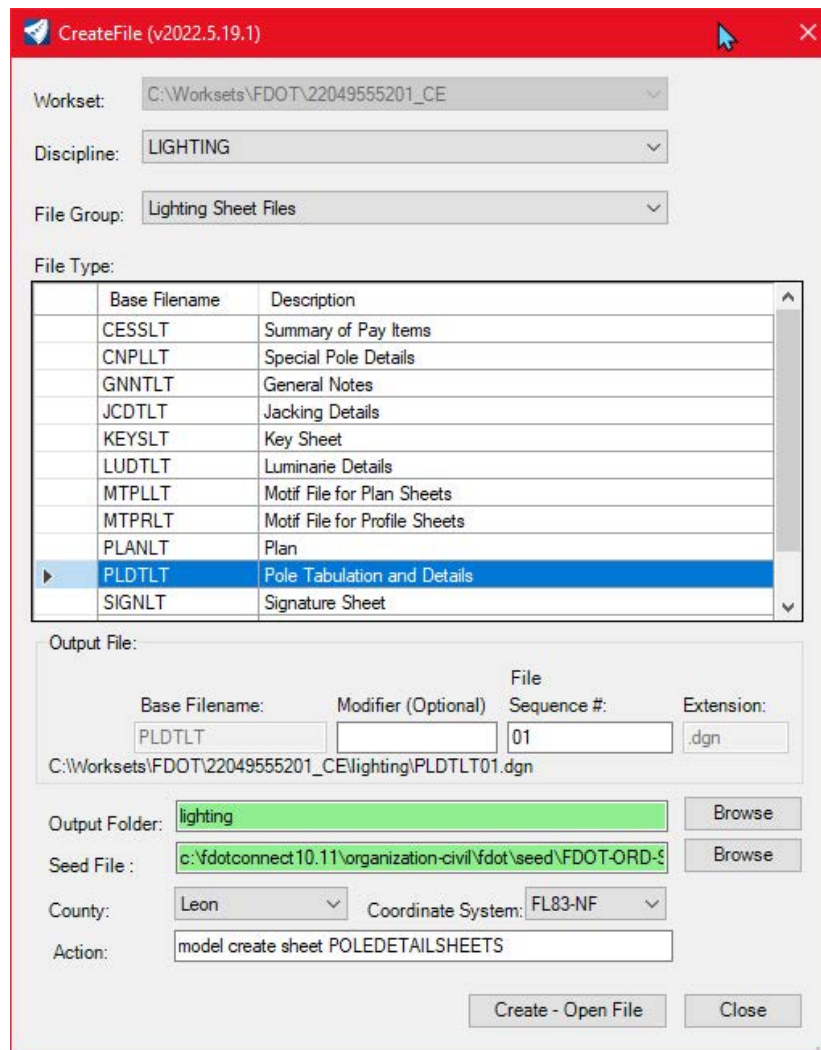
Lighting Data Table																						
Pole No.	Eastng	Northing	Baseline	Station	Offset	Foundation	Arm Length	Arm Rise	Mount Height	Quantity Luminaires	Type	Make\Model	Lumens	IES Dist Type	CCT(K)	Tilt (deg)	Luminaire Watts	Luminaire Volts	Load Center No.	Circuit No.	Maint. Agency	Pay Item
1	2006779.80	402739.70	CL SR61	700+95.00	52 RT		10'	3'	40'	1	Conventional	LED Cobrahead	15000	2	3000	5	250	480	A	A-1	FDOT	0715 61852
2	2006563.32	402864.73	CL SR61	703+45.00	52 RT		10'	3'	40'	1	Conventional	LED Cobrahead	15000	2	3000	5	250	480	A	A-2	FDOT	0715 61852
3	2006347.95	402989.36	CL SR61	705+95.00	52 RT		10'	3'	40'	1	Conventional	LED Cobrahead	15000	2	3000	5	250	480	A	A-3	FDOT	0715 61852
4	2006166.87	403138.28	CL SR61	708+45.00	52 RT		10'	3'	40'	1	Conventional	LED Cobrahead	15000	2	3000	5	250	480	A	A-4	FDOT	0715 61852
5	2006034.72	403331.94	CL SR61	710+95.00	52 RT		10'	3'	40'	1	Conventional	LED Cobrahead	15000	2	3000	5	250	480	A	A-5	FDOT	0715 61852
6	2005961.77	403555.75	CL SR61	713+45.00	52 RT		10'	3'	40'	1	Conventional	LED Cobrahead	15000	2	3000	5	250	480	A	A-6	FDOT	0715 61852
7	2005914.33	403801.20	CL SR61	715+95.00	52 RT		10'	3'	40'	1	Conventional	LED Cobrahead	15000	2	3000	5	250	480	A	A-7	FDOT	0715 61852
8	2005866.89	404046.66	CL SR61	718+45.00	52 RT		10'	3'	40'	1	Conventional	LED Cobrahead	15000	2	3000	5	250	480	A	A-8	FDOT	0715 61852
9	2006641.19	402699.65	CL SR61	701+95.00	52 LT		10'	3'	40'	1	Conventional	LED Cobrahead	15000	2	3000	5	250	480	A	B-1	FDOT	0715 61852
10	2006424.71	402824.68	CL SR61	704+45.00	52 LT		10'	3'	40'	1	Conventional	LED Cobrahead	15000	2	3000	5	250	480	A	B-2	FDOT	0715 61852
11	2006206.75	402960.53	CL SR61	706+95.00	52 LT		10'	3'	40'	1	Conventional	LED Cobrahead	15000	2	3000	5	250	480	A	B-3	FDOT	0715 61852
12	2006023.24	403150.14	CL SR61	709+45.00	52 LT		10'	3'	40'	1	Conventional	LED Cobrahead	15000	2	3000	5	250	480	A	B-4	FDOT	0715 61852
13	2005900.16	403383.95	CL SR61	711+95.00	52 LT		10'	3'	40'	1	Conventional	LED Cobrahead	15000	2	3000	5	250	480	A	B-5	FDOT	0715 61852
14	2005840.69	403634.19	CL SR61	714+45.00	52 LT		10'	3'	40'	1	Conventional	LED Cobrahead	15000	2	3000	5	250	480	A	B-6	FDOT	0715 61852
15	2005793.25	403879.65	CL SR61	716+95.00	52 LT		10'	3'	40'	1	Conventional	LED Cobrahead	15000	2	3000	5	250	480	A	B-7	FDOT	0715 61852
16	2005745.81	404125.11	CL SR61	719+45.00	52 LT		10'	3'	40'	1	Conventional	LED Cobrahead	15000	2	3000	5	250	480	A	B-8	FDOT	0715 61852

- Using what you have learned create a Load Center Report.

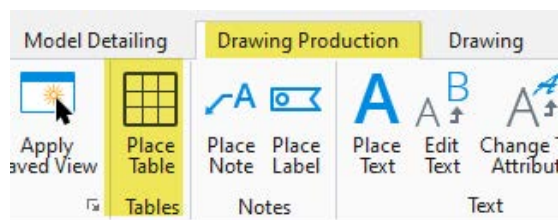
EXERCISE 6.8 *Placing the Light Pole Data Table*

In this exercise the designer will create a plan detail sheet and place the report that was created in the previous exercise.

1. From the FDOT ribbon select **Create File**.
2. Make the following selections and select **Create – Open File**.
3. When open select **Close** to exit the dialog.



4. On the drawing production ribbon, select **Place Table**.



5. Select **From File** and change the Text Style to **FDOT(Small)**
6. By default, the table is ready to place, left click in the sheet border to place the table.

- You will need to move and adjust the table, select the table and a border will highlight allowing you to adjust the size horizontally, vertically, and diagonally.

	A	B	C
1	Lighting Data Table		
2	Pole No.	Easting	Northing
3	1	2006779.80	402739
4	2	2006563.32	402864
5	3	2006347.95	402989

After adjustment your file should match the image below.

Pole No.	Easting	Northing	Baseline	Station	Offset	Foundation	Arm Length	Arm Rise	Mount Height	Quantity	Type	Manufacturer	Lumens	LED Watt Type	CCT(K)	TFC (Watt)	Luminaire Parts	Luminaire VOLT	Luminaire No.	Circuit No.	Mounting	Pay Item
1	2006779.80	402739.20	CL-SM61	709495.00	52-RT		10'	2'	40'	1	Conventional	LED Conventional	15000	2	3000	0	250	480	A	A-1	FGDT	0715 61852
2	2006563.32	402864.73	CL-SM61	703445.00	52-RT		10'	2'	40'	1	Conventional	LED Conventional	15000	2	3000	0	250	480	A	A-2	FGDT	0715 61852
3	2006347.95	402989.36	CL-SM61	705495.00	52-RT		10'	2'	40'	1	Conventional	LED Conventional	15000	2	3000	0	250	480	A	A-3	FGDT	0715 61852
4	2006166.87	402739.20	CL-SM61	709445.00	52-RT		10'	2'	40'	1	Conventional	LED Conventional	15000	2	3000	0	250	480	A	A-4	FGDT	0715 61852
5	2006013.72	403312.94	CL-SM61	716495.00	52-RT		10'	2'	40'	1	Conventional	LED Conventional	15000	2	3000	0	250	480	A	A-5	FGDT	0715 61852
6	2005981.77	402555.75	CL-SM61	717445.00	52-RT		10'	2'	40'	1	Conventional	LED Conventional	15000	2	3000	0	250	480	A	A-6	FGDT	0715 61852
7	2005914.13	402861.20	CL-SM61	715495.00	52-RT		10'	2'	40'	1	Conventional	LED Conventional	15000	2	3000	0	250	480	A	A-7	FGDT	0715 61852
8	2005866.09	402046.66	CL-SM61	718445.00	52-RT		10'	2'	40'	1	Conventional	LED Conventional	15000	2	3000	0	250	480	A	A-8	FGDT	0715 61852
9	2005841.19	402699.65	CL-SM61	701495.00	52-RT		10'	2'	40'	1	Conventional	LED Conventional	15000	2	3000	0	250	480	A	A-9	FGDT	0715 61852
10	2005824.71	402864.88	CL-SM61	704445.00	52-RT		10'	2'	40'	1	Conventional	LED Conventional	15000	2	3000	0	250	480	A	A-10	FGDT	0715 61852
11	2005806.75	402969.57	CL-SM61	706495.00	52-RT		10'	2'	40'	1	Conventional	LED Conventional	15000	2	3000	0	250	480	A	A-11	FGDT	0715 61852
12	2006023.24	403158.14	CL-SM61	709445.00	52-RT		10'	2'	40'	1	Conventional	LED Conventional	15000	2	3000	0	250	480	A	A-12	FGDT	0715 61852
13	2005900.16	403383.33	CL-SM61	711495.00	52-RT		10'	2'	40'	1	Conventional	LED Conventional	15000	2	3000	0	250	480	A	A-13	FGDT	0715 61852
14	2005840.69	402634.19	CL-SM61	714445.00	52-RT		10'	2'	40'	1	Conventional	LED Conventional	15000	2	3000	0	250	480	A	A-14	FGDT	0715 61852
15	2005793.25	402979.65	CL-SM61	716495.00	52-RT		10'	2'	40'	1	Conventional	LED Conventional	15000	2	3000	0	250	480	A	A-15	FGDT	0715 61852
16	2005743.81	404123.11	CL-SM61	719445.00	52-RT		10'	2'	40'	1	Conventional	LED Conventional	15000	2	3000	0	250	480	A	A-16	FGDT	0715 61852

7

PAY ITEMS & QUANTITY REPORTS

OBJECTIVE

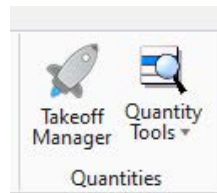
The Objective of this chapter is to provide an overview of working with pay item numbers and running quantity reports using takeoff manager. The designer will also learn different editing techniques using explorer on the ORD ribbon.

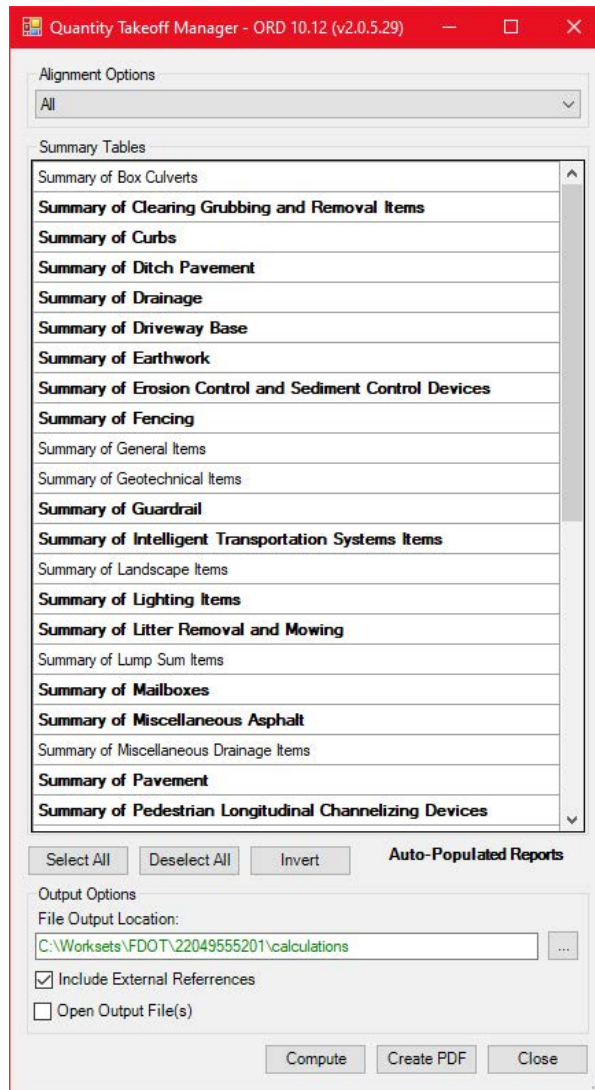
INTRODUCTION

This chapter will demonstrate the tools that are available within ORD that allow you work with pay item numbers. The end goal of any FDOT project is to report quantities and there are several tools within ORD that allow you to manipulate elements that have pay item data attached.

TAKEOFF MANAGER

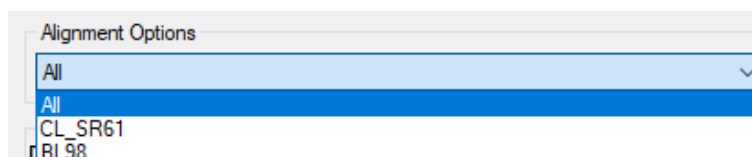
Take off manager is used to generate individual reports or create a project pdf with all elements that have had pay item information attached. The traffic tools not only place cells and draw striping, but all the pay item information is attached as each item is placed or drawn. The following shows descriptions of the take-off manager dialog box.





ALIGNMENT OPTIONS

The designer can choose which alignment is used to create a quantity report. The default is all alignments, but you can select individual alignments if necessary.



SUMMARY TABLES

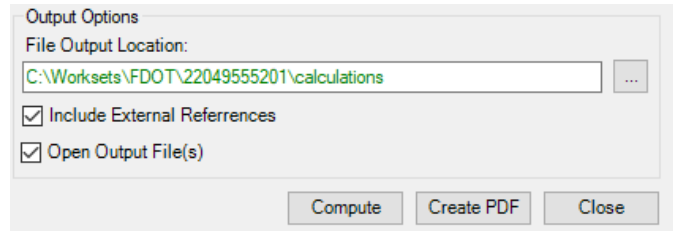
The designer can select One report individually or pick and choose the reports needed. You can even select all and run all at the same time. Keep in mind that each report will open a session of excel, so the more reports you select the more excel files you will have open at once. It's a good habit to close the excel files after you have reviewed them, if not you will experience an error when running a report while excel is open. The bold text in the summary tables list represents the automated reports, the non-bold text represents the reports that have-to-have data manually entered.

Summary Tables
Summary of Box Culverts
Summary of Clearing Grubbing and Removal Items
Summary of Curbs
Summary of Ditch Pavement
Summary of Drainage
Summary of Driveway Base
Summary of Earthwork
Summary of Erosion Control and Sediment Control Devices
Summary of Fencing
Summary of General Items
Summary of Geotechnical Items
Summary of Guardrail
Summary of Intelligent Transportation Systems Items
Summary of Landscape Items
Summary of Lighting Items
Summary of Litter Removal and Mowing
Summary of Lump Sum Items
Summary of Mailboxes
Summary of Miscellaneous Asphalt
Summary of Miscellaneous Drainage Items
Summary of Pavement
Summary of Pedestrian Longitudinal Channelizing Devices
Summary of Performance Turf
Summary of Permanent Barriers
Summary of Permanent Crash Cushions
Summary of Permanent Driveways
Summary of Railing
Summary of Sidewalk and Detectable Warnings
Summary of Signalization Items
Summary of Signing and Pavement Marking
Summary of Special Detours
Summary of Structure Quantities
Summary of Temporary Crash Cushions
Summary of Temporary Driveways
Summary of Temporary Highway Lighting
Summary of Temporary Signalization and Detection
Summary of Temporary Traffic Control Plan Items
Summary of Traffic Monitoring Site Items
Summary of Utility Adjustments
Summary of Utility Items
Summary of Walls

OUTPUT OPTIONS

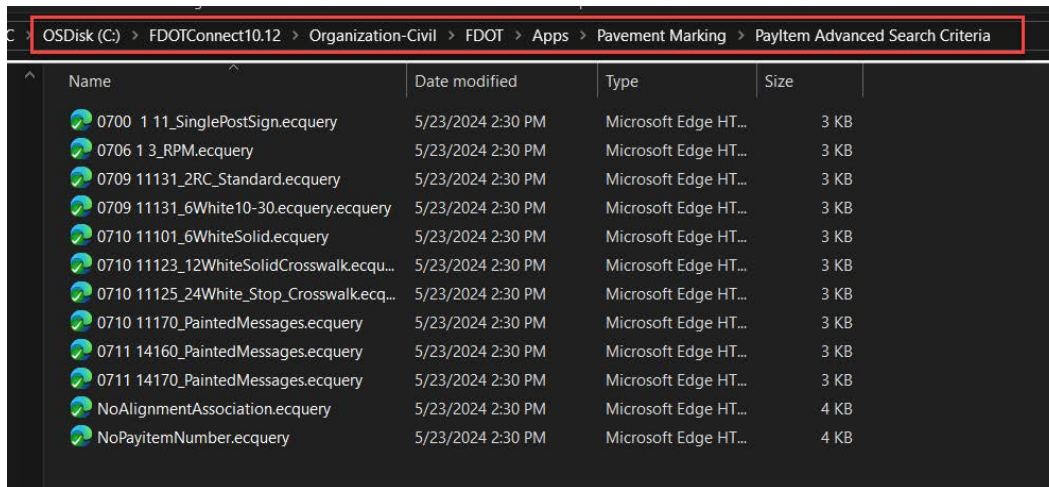
The File Output Location is where the generated reports will be located, always put them in your calculations folder within your project. You have the option to include any reference files in your report. Don't forget to toggle Open Output Files, otherwise you will have to manually open each excel file to review.

To run a report(s) click on **Compute**. Click **Create PDF** to create a project wide quantity report. To close the dialog either click **Close** or the **Red X** on the dialog box.



ADVANCED SEARCH

Advanced Search is a way to examine if elements have pay item data attached or not. You can create and save new searches pertaining to certain pay item numbers. The elements will highlight differently, depending on the search you execute. You can access a folder containing a few searches in the Pavement Marking folder. The CADD office will add additional searches before each MR. The few searches that are provided is a good starting point for you to create custom pay item searches.



The screenshot shows a Windows File Explorer window with the address bar displaying the path: "OSDisk (C:) > FDOTConnect10.12 > Organization-Civil > FDOT > Apps > Pavement Marking > PayItem Advanced Search Criteria". The main area shows a list of files with columns for Name, Date modified, Type, and Size.

Name	Date modified	Type	Size
0700 1 11_SinglePostSign.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
0706 1 3_RPM.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
0709 11131_2RC_Standard.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
0709 11131_6White10-30.ecquery.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
0710 11101_6WhiteSolid.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
0710 11123_12WhiteSolidCrosswalk.ecqu...	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
0710 11125_24White_Stop_Crosswalk.ecq...	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
0710 11170_PaintedMessages.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
0711 14160_PaintedMessages.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
0711 14170_PaintedMessages.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
NoAlignmentAssociation.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	4 KB
NoPayitemNumber.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	4 KB

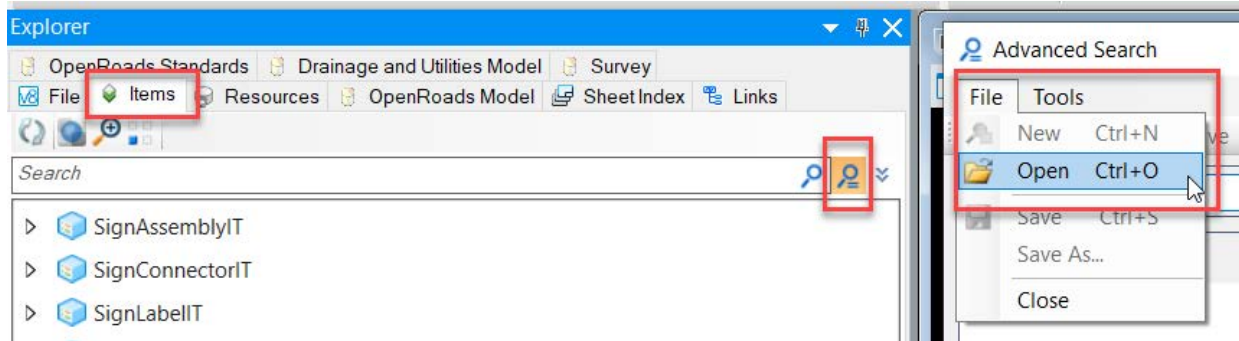
OSDisk (C:) > FDOTConnect10.12 > Organization-Civil > FDOT > Apps > Pavement Marking > PayItem Advanced Search Criteria

Name	Date modified	Type	Size
0700 1 11_SinglePostSign.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
0706 1 3_RPM.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
0709 11131_2RC_Standard.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
0709 11131_6White10-30.ecquery.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
0710 11101_6WhiteSolid.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
0710 11123_12WhiteSolidCrosswalk.ecqu...	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
0710 11125_24White_Stop_Crosswalk.ecqu...	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
0710 11170_PaintedMessages.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
0711 14160_PaintedMessages.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
0711 14170_PaintedMessages.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	3 KB
NoAlignmentAssociation.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	4 KB
NoPayitemNumber.ecquery	5/23/2024 2:30 PM	Microsoft Edge HT...	4 KB

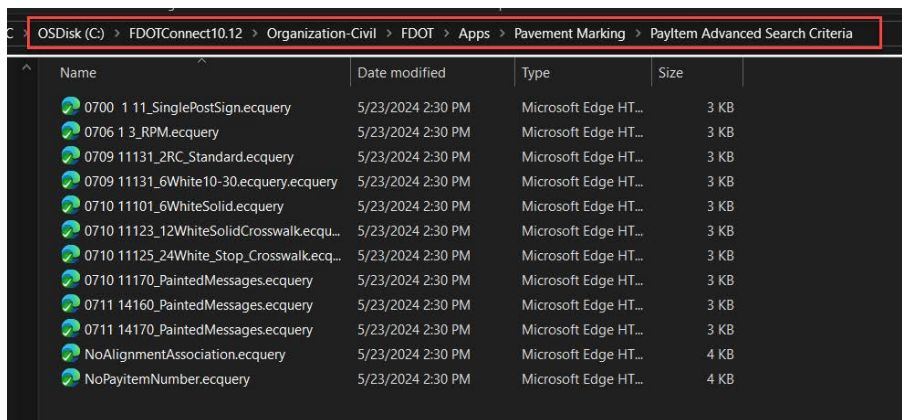
EXERCISE 7.1 Opening a Pay Item search (ecquery)

In this exercise the designer will open an ecquery to check the 10-30 skip striping for pay item information. The striping will highlight to show it has the correct pay item number attached.

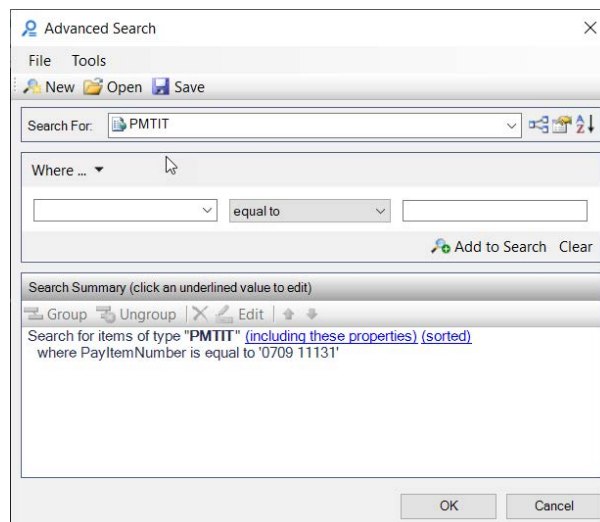
1. Open *DSGNP01.dgn* file.
2. Click on **Explorer > Items > Advanced Search > File Open**



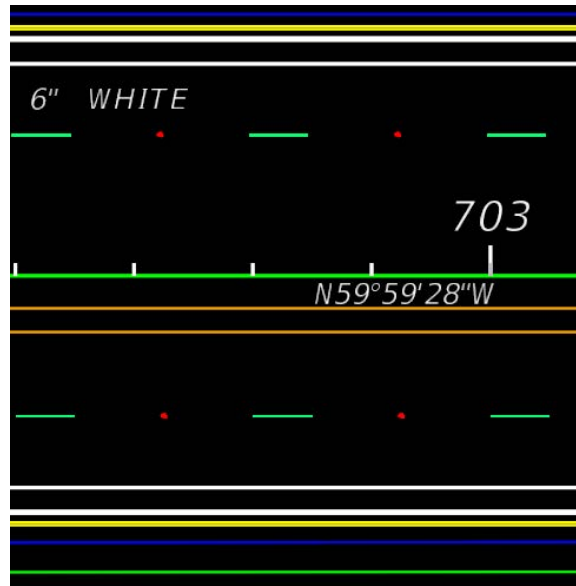
3. Browse to the location shown below and open the 0709 11131_6White10-30.ecquery.



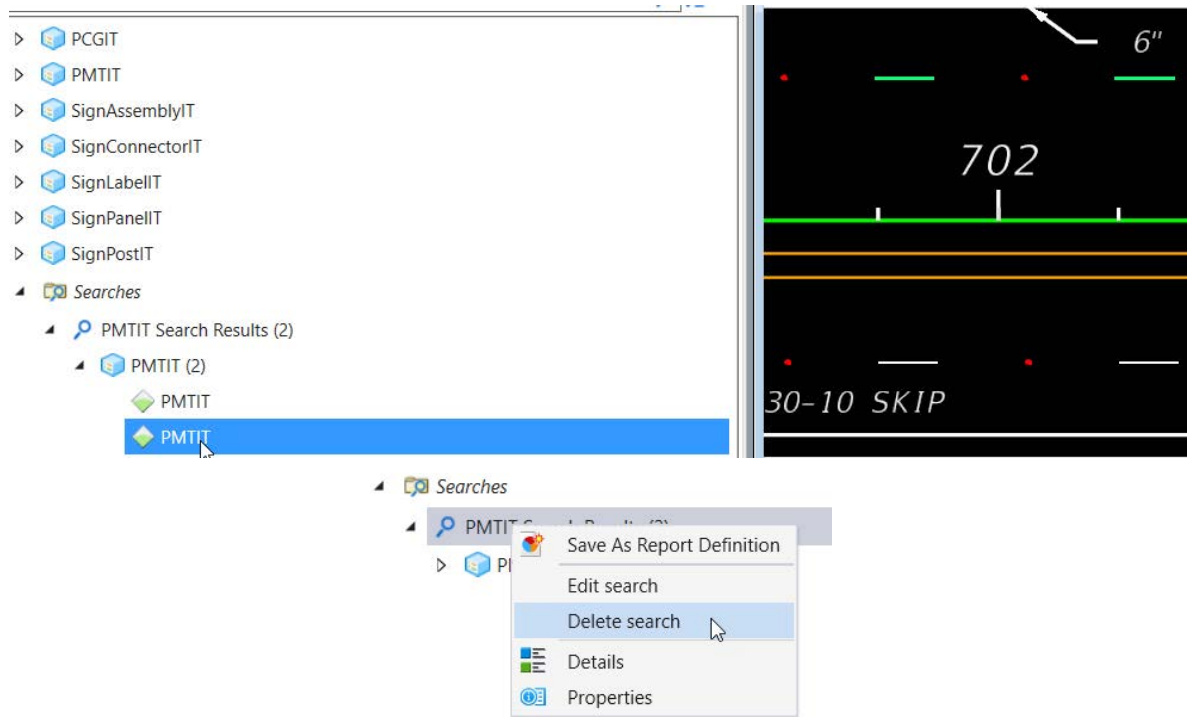
4. Click **OK**. When the search is loaded it will look like the image below. Click **OK** to run the search.



5. Notice how all the 10-30 skip patterns are highlighted green, that contain that pay item number.



If you expand the search results you can query each element individually, notice how it only highlights the one 10-30 skip pattern based on my selection. You can load as many searches as you want in your file, if you want to remove them **Right Click** and select **Delete**.



If you right click and select **details** it displays a list as shown below.

Item	PayItemNu...	PayItemDe...	UnitOfMeas...	Pay Item (P...	Side (PMTIT)	Length (PM...	Stripe Leng...	Skip Lengt...	Alignment (...)
PMTIT	0709 11131	Traffic Stripe -...	GM	0709 11131	stripe01	1331.9129595...	30	10	CL_SR61
PMTIT	0709 11131	Traffic Stripe -...	GM	0709 11131	stripe01	1359.3748275...	30	10	CL_SR61

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Traffic Plans Setup