

State of Florida
Department of Transportation

FDOTConnect

for

OpenRoads Designer

Traffic Plans

**Signing, Pavement Markings, Signalization,
And Lighting**

Course Guide

2022

PRODUCTION SUPPORT CADD OFFICE
TALLAHASSEE, FLORIDA
Randy Roberts

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

FDOTConnect

for

OpenRoads Designer

Traffic Plans

Signing, Pavement Markings

And Lighting

Description:

This is a 2-day training course to 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 Tools
- Signalization Application
- Lighting Plans

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:

Participants need to have a basic understanding of Computer Aided Drafting and Design (CADD) using MicroStation, a basic understanding of OpenRoads Designer CONNECT Edition - OpenRoads Technology tools and a solid understanding of the engineering necessary to design FDOT Traffic Plans on a Roadway.

Duration: 16 Hours

Professional Credit Hours: 16 PDHs

Note *PDH Credit will only be available with Instructor lead or Computer Based Training (CBT) thru Learning Curve.*

1	OpenRoads Designer SETUP	9
	<i>Objective</i>	9
	<i>Introduction</i>	9
	FDOT WorkSpace	9
	Setting WorkSet Location	10
	Project Setup	10
	Create File	11
	Workset	12
	Discipline	12
	File Group	12
	File Type	12
	Output File	13
	Output Folder	13
	Seed File	13
	County & Coordinate System	13
	Create -Open File	13
2	SIGNING TOOLS	14
	<i>Objective</i>	14
	<i>Introduction</i>	14
	<i>FDOT Signs Application</i>	15
	Assembly Creation	15
	Assembly Creation - Panel	16
	Assembly Creation - Post	17
	Assembly Creation - Post Additional Pay Items	18
	Assembly Creation – Placement	18
	Labels	19
	Labels – General Settings	19
	Labels – Panel	19
	Labels - Post	19
	Labels - Post Count	20
	Tools and Settings	20
	Tools & Settings – Connector	20
	Tools & Settings – Placement Guide	20
	Tools & Settings – modification	20
	User Settings	22
	Designer Settings – general	22
	User Settings – Files	23
	User Settings – admin only	23
	<i>EXERCISES</i>	25
	Exercise 2.1 Place Single Panel Sign Assembly	25
	Exercise 2.2 Saving the Sign Assembly	28
	Exercise 2.3 Update Signpost Location	28

Exercise 2.4	Place Multi-Panel Sign Assembly	30
Exercise 2.5	Creating and Placing a Sign Assembly using 3 methods (Part 1)	34
Exercise 2.6	Placing same sign assembly using a saved xml file (Part 2)	35
Exercise 2.7	(Part 3)	35
Exercise 2.8	Reviewing the Sign Assembly Inventory in the Design File	36
Exercise 2.9	Editing an Existing Assembly (Part 1).....	37
Exercise 2.10	Editing an Existing Assembly (Part 2)	39
Exercise 2.11	Labeling Assembly Count	39
Exercise 2.12	Placing the same Sign Assembly Twice (Part 1).....	40
Exercise 2.13	Adding additional pay items to posts	42
Exercise 2.14	Adding Rotated Panels to A Sign Assembly	44
Exercise 2.15	Placing a Panel Only Option	47
3	PAVEMENT MARKING TOOL.....	52
	<i>Objective</i>	52
	<i>Introduction</i>	52
	<i>Pavement Marking Tool</i>	52
	Striping.....	53
	Stripe Pattern.....	54
	Element Data	55
	Separation Mode	56
	Separation Pattern.....	56
	Control Points	56
	Chevron Diverge/Merge	57
	Diverge Pattern.....	57
	Control Points	57
	EXERCISES	58
	Exercise 3.1 Draw Striping Patterns.....	58
	Exercise 3.2 Placing a 24" Stop Bar.....	60
	Exercise 3.3 Placing two different Patterns	62
	Exercise 3.4 Placing RPM's within a 10/30 Skip Pattern.....	63
	Exercise 3.5 Drawing a freeform Arc	64
	Exercise 3.6 Placing and Editing a Crosswalk.....	65
	Exercise 3.7 Adding Patterns inside Cross Walk	67
	Exercise 3.8 Extend Bike Lane Striping and 10/30 Skip to Intersection.....	68
	Exercise 3.9 Adding Bike Lane and 10/30 Skip pattern	70
	Exercise 3.10 Placing a Striping Label.....	71
4	TRAFFIC DESIGN	72
	<i>Objective</i>	72
	<i>Introduction</i>	72
	<i>Place Cell Group</i>	73
	Group Pattern	73

Location	73
<i>Place Conduit</i>	74
Conduit Settings	74
<i>Tools and Settings</i>	74
Modification	74
<i>EXERCISES</i>	74
Exercise 4.1 Placing Painted Pavement Message	74
Exercise 4.2 Placing RPMs	76
Exercise 4.3 Combination Striping and Painted Pavement Message	77
5 SIGNALIZATION PLANS	81
<i>Objective</i>	81
<i>Introduction</i>	81
<i>Signals</i>	82
General	82
Additional Pay Items	83
Cell	83
From Pattern	83
Place Item	83
<i>Category Type Options</i>	83
Aluminum Signal Poles	84
Cable	84
Signal Cable	84
Fiber Optic Cable	85
Fiber Optic Connection	85
Fiber Optic Connection Hardware	85
Twisted Pair Cable	85
Multi-Conductor Comm Cable	86
CCTV Poles	86
Concrete CCTV Pole	86
Steel CCTV Pole	86
Conduit	86
Controllers and Cabinets	87
Control Beacon Controller Assembly	87
Traffic Controller Assembly	87
Traffic Controller w/o Cabinet	88
Traffic Signal Controller Cabinet (Cabinet WITHOUT Controller)	88
Electrical Service & Wires	88
Electrical Power Service	88
Electric Service Wire	89
Inductive Loop Detectors	89
Loop Assemblies	90
Mast Arm Assemblies	90

Furnish & Install	90
Furnish & Install Ex Foundation	91
Replace Arm on Existing Pole	91
Remove	91
Messenger Wire.....	92
Pedestrian Detector.....	92
Pedestrian Signals.....	92
Prestressed Concrete Poles	93
Pull and Junction Boxes	93
Pull and Junction Boxes	93
Junction Boxes	93
Signal Head Auxiliaries.....	94
Furnish & Install.....	94
Install	94
Signal Pre-Emption	94
Span Wire Assemblies.....	95
Strain Poles	95
Wood Strain Poles	95
Steel Strain Poles	95
Traffic Signals.....	96
Furnish & Install - Aluminum	96
Furnish & Install – Polycarbonate w/ Aluminum Top.....	96
Furnish & Install – Polycarbonate.....	97
Furnish & Install – Programmable	97
Install	98
Remove	98
Relocate	99
Vehicle Detection System	99
Microwave	99
Video.....	99
Wireless Magnetometer	100
Traffic Data Detection System	100
AVI	101
Wrong Way.....	101
<i>Signal Design Pull Down Menu</i>	<i>101</i>
Place Signal	101
Place Label.....	102
Edit Signal	102
Update Label.....	103
Exercise 5.1 Placing a Mast Arm Assembly.....	103
6 LIGHTING PLANS	109
<i>Objective.....</i>	<i>109</i>
<i>Introduction</i>	<i>109</i>

<i>Place Cell Group</i>	110
Group Pattern	110
Location	110
<i>Place Conduit</i>	110
Conduit Settings.....	111
<i>Tools and Settings</i>	111
Modification	111
<i>EXERCISES</i>	111
Exercise 6.1 Placing Light Poles	111
Exercise 6.2 Placing Pull and Splice Boxes	114
Exercise 6.3 Placing a Load Center	115
Exercise 6.4 Drawing Conduit.....	117
<i>Light Pole Manager</i>	118
Light Poles.....	119
Load Center.....	119
Process/Save Light Poles – Process/Save Load Centers	119
Create Light Pole and Load Center Report	120
Exercise 6.5 Numbering and Adding Properties to Light Poles	122
Exercise 6.6 Creating a Light Pole Report.....	127
Exercise 6.7 Placing the Light Pole Data Table	128

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:

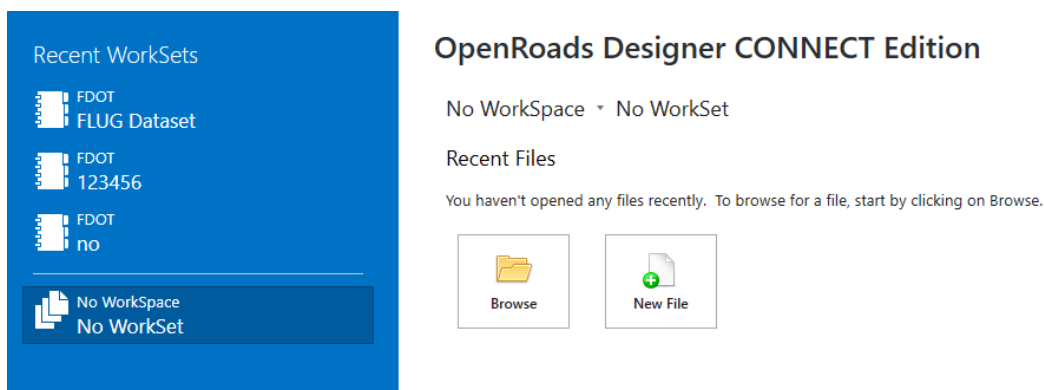
- FDOT Workspace
- FDOT Worksets
- Creating a New Workset
- Create File Process

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.

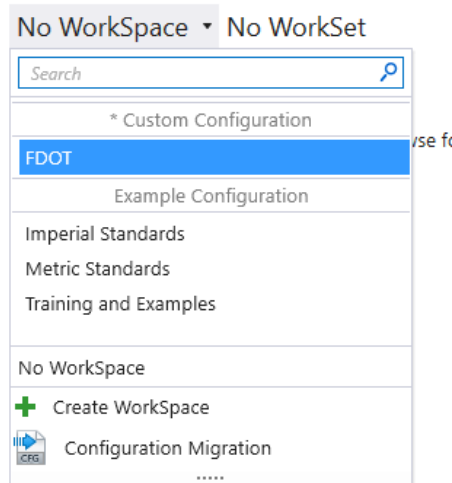
FDOT WORKSPACE

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.



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

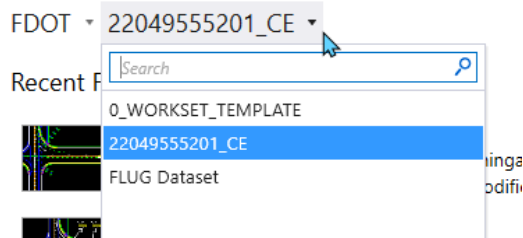
OpenRoads Designer CON



Not only can you select a workspace from this dialog, 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.

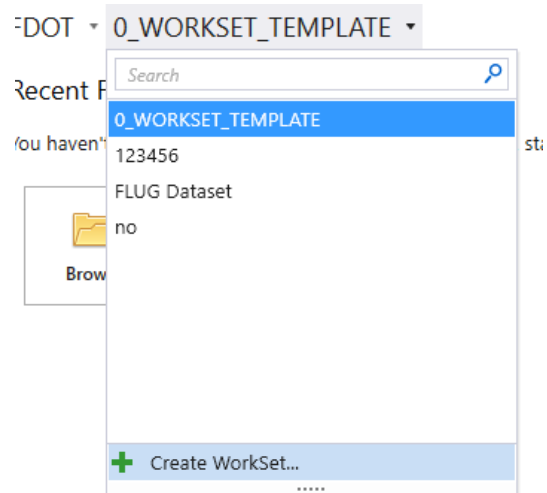


If you have worked in this workset before a list of recently opened files are visible and are ready to be opened. The Recent files list only applies for the current workset.



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 work space 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.

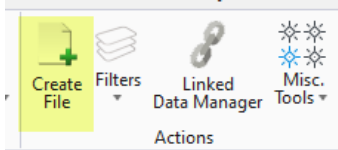
It is important to note that the first file you must open is the _BlankFile.dgn, this will allow you to start the design file creation process using the Create File application located on the FDOT Ribbon in ORD. The Blank File has a notification letting you know to not start any design file usage from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



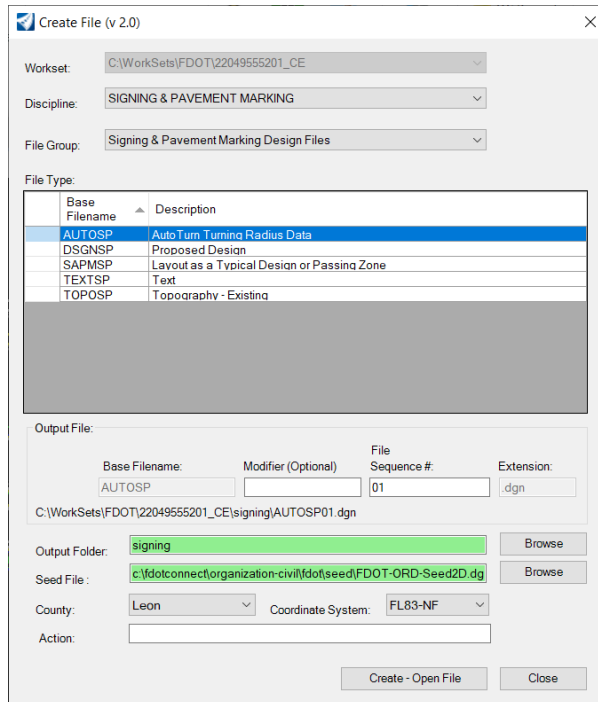
*This file should not be used for FDOT work.
Use the "Create File" application to create
QC Compliant files.*

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.



WORKSET

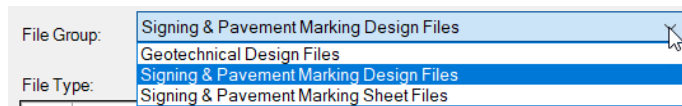
The workset by default should be the current workset where your project is located, this will allow the create file to create and place new files in the proper project folder.

DISCIPLINE

The discipline options are Architectural, Geotech, MechElec, Right of Way, Roadway, & Structures. 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 are 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

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 *M.U.T.C.D.* and *Standard Highway Sign* book. These cells can be placed anywhere within the design file.

In this chapter, the following topics will be covered:

- FDOT Signs application
- Guide SIGN 8.1

INTRODUCTION

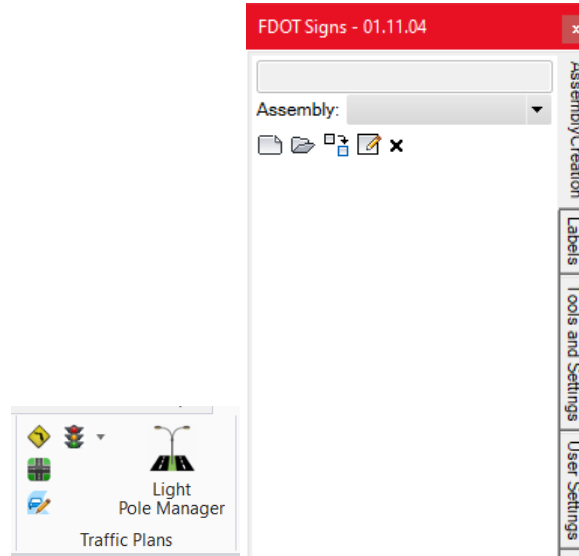
At this point, the designer may have an inventory of existing signs for their project. The designer must decide which signs need to be removed, relocated, or replaced. This work should be done in the proposed design file, *DSGNP01.DGN*.

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.

GuidSIGN 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.

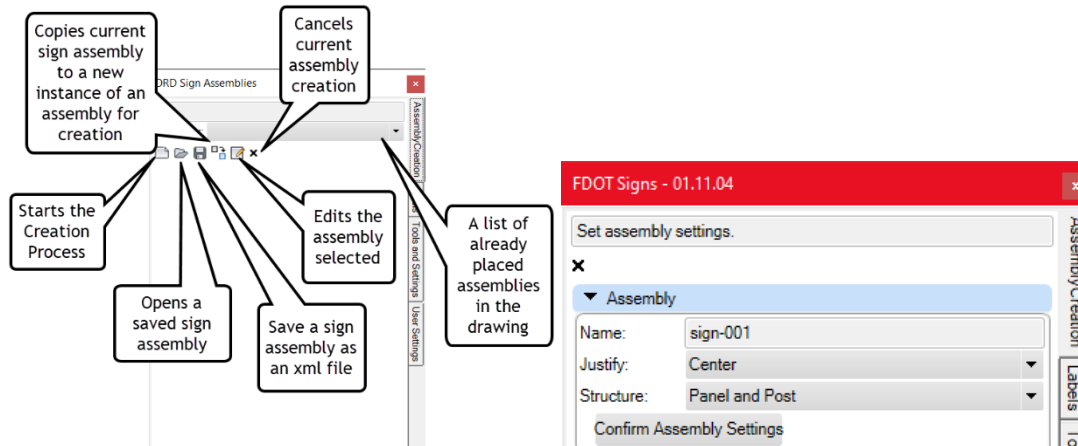
FDOT SIGNS APPLICATION

Accessible from the FDOT Ribbon on the Traffic Plans panel, the FDOT Signs Application is designed to assist in the 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 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, & Tools and Settings.**

ASSEMBLY CREATION





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

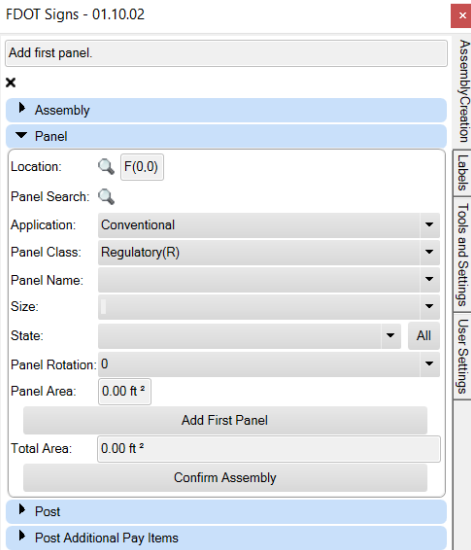
- **✕ Cancels Assembly Creation:** When selected it cancels the assembly creation process and returns to the default dialog as shown above left.

- **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 over written.
- **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 effect 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.
- **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, Remove, and Relocate. 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.



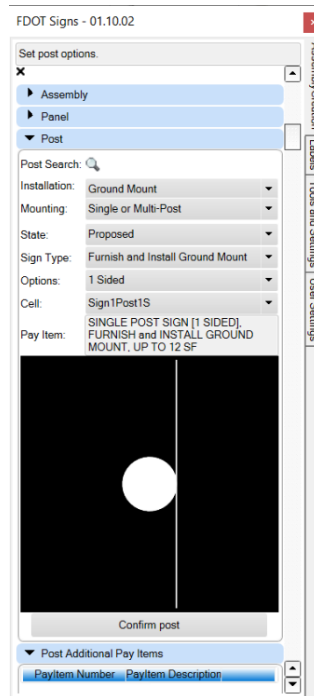
The screenshot shows a software window titled "FDOT Signs - 01.10.02". The main area is a configuration panel for adding a new panel. It features a search bar at the top with the text "Add first panel:". Below this is a tree view with "Assembly" expanded and "Panel" selected. The configuration fields include:

- Location: F(0,0)
- Panel Search: (with a search icon)
- Application: Conventional (dropdown)
- Panel Class: Regulatory(R) (dropdown)
- Panel Name: (empty field)
- Size: (empty field)
- State: All (dropdown)
- Panel Rotation: 0 (dropdown)
- Panel Area: 0.00 ft²
- Total Area: 0.00 ft²

 At the bottom of the configuration area are two buttons: "Add First Panel" and "Confirm Assembly". To the right of the main configuration area is a vertical sidebar with buttons for "Assembly/Creation", "Labels", "Tools and Settings", and "User Settings".

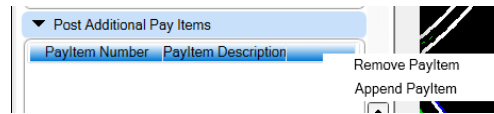
- **Total Area** – This displays the total Square Footage of all panels that are part of an assembly.
- **Confirm Assembly** – When all panels have been added to the assembly and the designer is ready to move on to the post options click on Confirm Assembly.

ASSEMBLY CREATION - POST



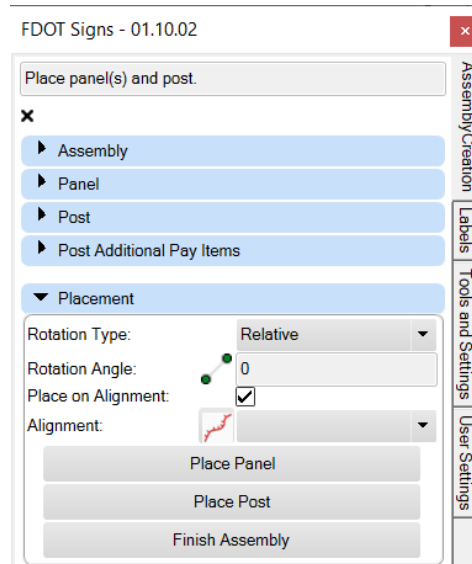
- **Post Search** – Allows designer to search for a specific post which will avoid the pulldown navigation to choose the post.
- **Installation** – The designer selects which installation method to use. The following are available, Ground Mount, Panel Only, and Overhead.
- **Mounting** – This allows 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 is dependent on the type of State selected.
- **Options** – This pull down gives the designer 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.
- **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

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.
- **Place on Alignment** – This toggle when on will place the assembly along an alignment with a Station, if toggled off it will be placed freely with no association to the alignment.
- **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

The screenshot shows a software window titled "FDOT Signs - 01.10.02". On the right side, there is a vertical toolbar with four icons labeled "Assembly/Creation", "Labels", "Tools and Settings", and "User Settings". The "Labels" icon is active. The main area contains a settings panel with the following sections:

- General Settings**:
 - Text Style: FDOT Signs (dropdown)
 - Add Shapes:
- Panel**:
 - Display Name:
 - Display Size:
 - Display State:
 - Level: TextLabel (dropdown)
 - Spacing: 2.0000 (text input)
 - Place Panel Label (button)
- Post**:
 - Display Pay Item:
 - Display Station:
 - Display State:
 - Level: PayItem_dp (dropdown)
 - Spacing: 2.0000 (text input)
 - Place Post Label (button)
- Post Count**:
 - Level: TextLabel (dropdown)
 - Place Post Count Label (button)

LABELS – GENERAL SETTINGS

- **Text Style** – Controls which font is used for the labels; default is set to FDOT Signs.
- **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. Higher number equals bigger space, smaller number moves text closer together.
- **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

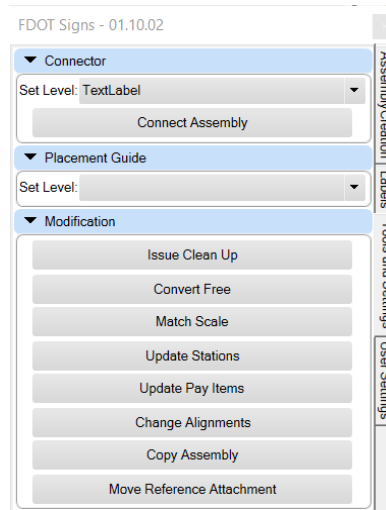
- **Display Pay Item** – Controls if the Post label contains the Pay Item Number.
- **Display Station** – Controls if the Station location is part of the label or not.
- **Display State** - Controls if the state is labeled, default is proposed. If toggled on the “Existing to Remain” or “To Be Relocated” 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. Higher number equals bigger space, smaller number moves text closer together.
- **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

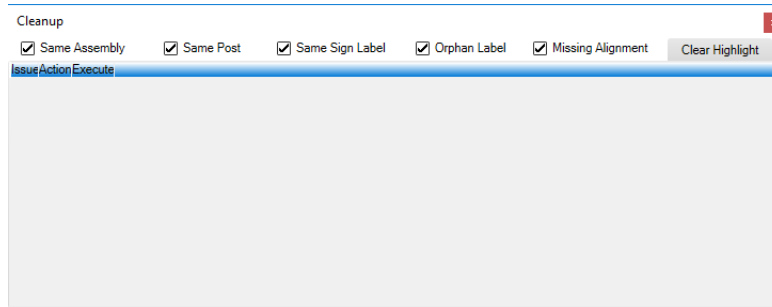
- **Set Level** – The default level of the connector line is TextLabel but can be changed by use of the pull-down menu.
- **Connect Assembly** – The connector line is the leader line between the post and panel and will dynamically stay connected if panel or post is moved. If the design file has assemblies 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.

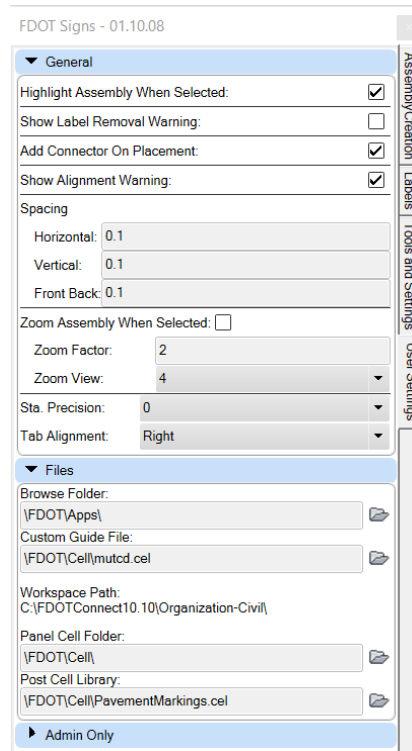
Missing Alignment – If an alignment that has Sign Assemblies associated to it is deleted, this will delete all signs that are still associated to the deleted alignment.

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 designer 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

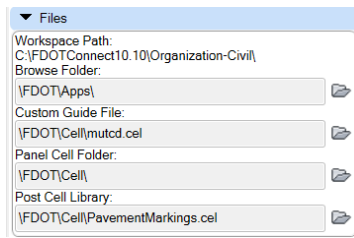


DESIGNER SETTINGS – GENERAL

- **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.

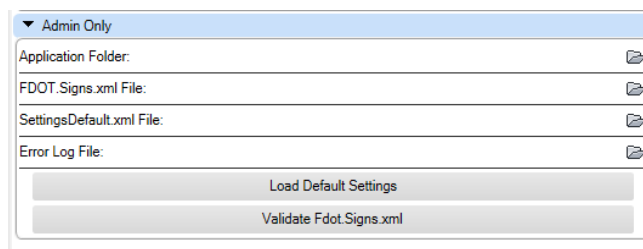
USER SETTINGS – FILES



Note *The pathing is now set upon installation to the install location via variables before this was an issue when a network server installation was executed. The designer will need read/write permissions to the install 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 pointing.
- **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.

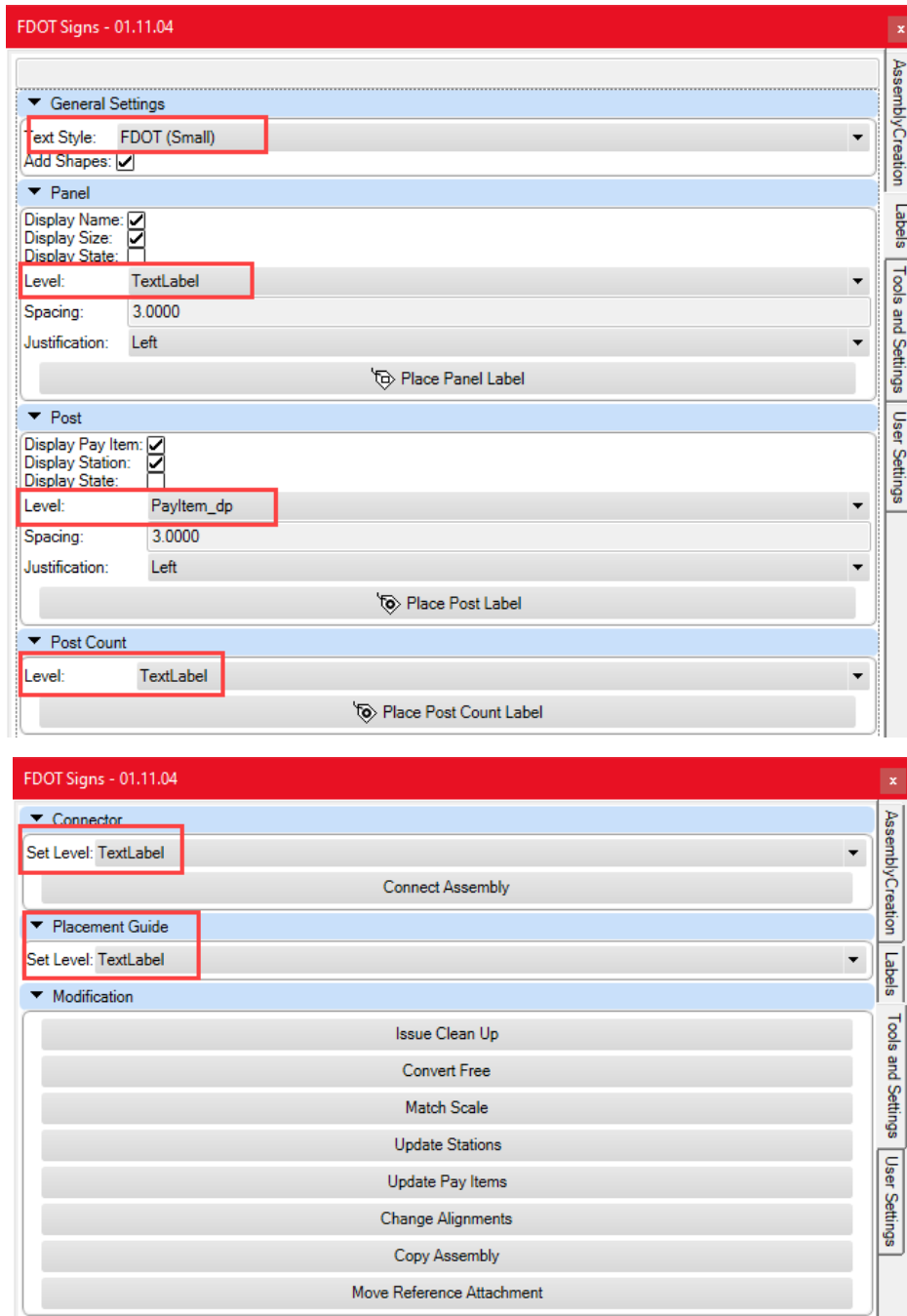
USER SETTINGS – ADMIN ONLY



- **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, however if it is necessary use this command to access it.
- **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.




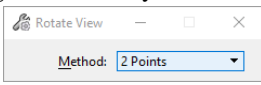
EXERCISES

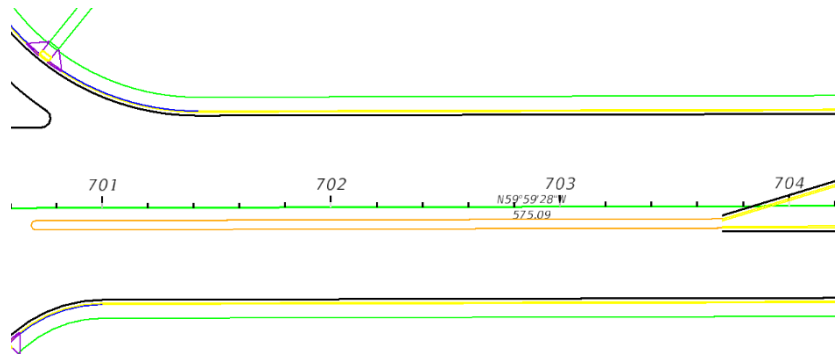
Exercise 2.1 Place Single Panel Sign Assembly

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.

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** is 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 current panel will be located on the grid, green denotes a grid 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 presets sized, 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 from the default parameters if needed.

a. Click on **Confirm Post** to continue to the *Placement* section.

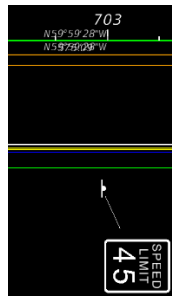
12. Select **Place Panel** to start the *panel placement command*.

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.

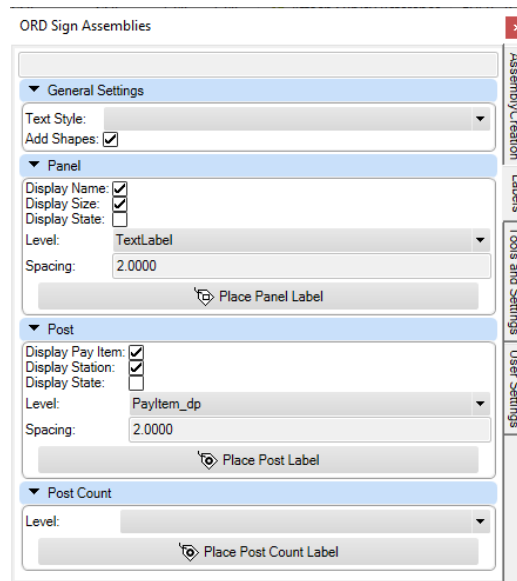
14. Select **Place Post**, notice how the app remembers the Alignment and is ready to place the post, left click to place the Post near Station 702+90

15. Select **Finish Assembly** to proceed to placing Labels.

The drawing should look like below.



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




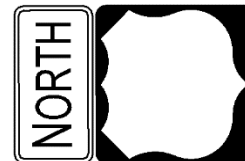
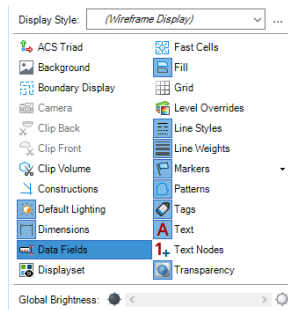
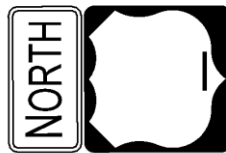
17. Click **Place Panel Label**, click anywhere on the panel and left click to the right of the assembly.

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.

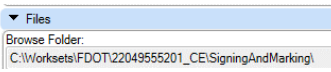
When the panels are placed you may see the data fields still be visible along with the desired text, to cut off the data fields use the view attribute pulldown and toggle off Data Fields. 




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 instance. 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 *DSGNSP01.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 can use the update stations button on the Designer Settings tab.

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 configuration dialog box showing the following settings:

- Location: F(0,0)
- Panel Search: (empty)
- Application: Conventional
- Panel Class: Route Markers(M)
- Panel Name: M01-4 (2 digits) [U.S. Route Sign (2 digits)]
- Size: 24"x24"
- State: Proposed
- Panel Rotation: 0
- Field 1: 98

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

Panel configuration dialog box showing the following settings:

- Panel Search: (empty)
- Application: Conventional
- Panel Class: Route Markers(M)
- Panel Name: M01-4B (3 digits) [U.S. Route Sign (3 digits)]
- Size: 30"x24"
- State: Proposed
- 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 configuration dialog box showing the following settings:

- Location: F(1,0)
- Panel Search: (empty)
- Application: F(0,0) F(0,1) F(0,2)
- Panel Class: (empty)
- Panel Name: F(1,0) F(1,1) F(1,2)
- Size: (empty)

The location options F(0,0), F(0,1), and F(1,0) are highlighted with green and yellow boxes respectively, indicating the selection process.

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

▼ Panel

Location:

Panel Search:

Application: Conventional

Panel Class: Route Markers(M)

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

Size:

State: Proposed

10. Select **Add Next Panel**.

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

Location:

Panel Search:

Application:

Panel Class:

Size:

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

▼ Panel

Location:

Panel Search:

Application: Conventional

Panel Class: Route Markers(M)

Panel Name: M6-1R [Directional Arrow - RIGHT]

Size:

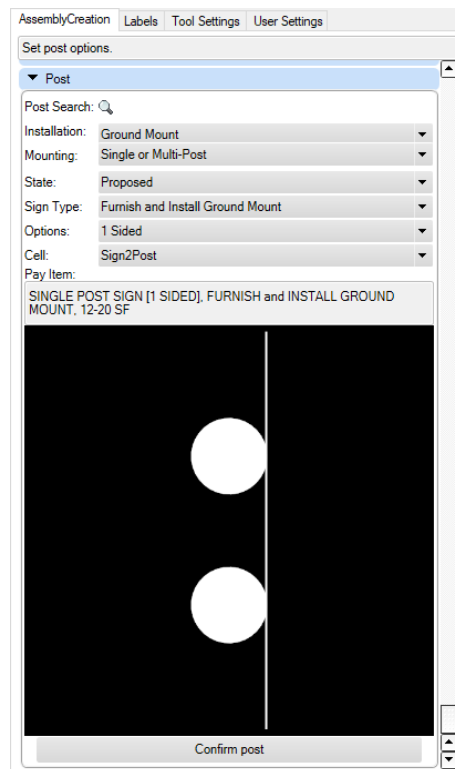
State: Proposed

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.



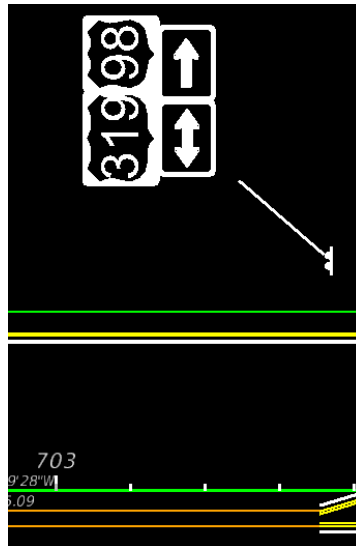
15. Select **Confirm Assembly**.
16. In the *Post* section make the following selections.



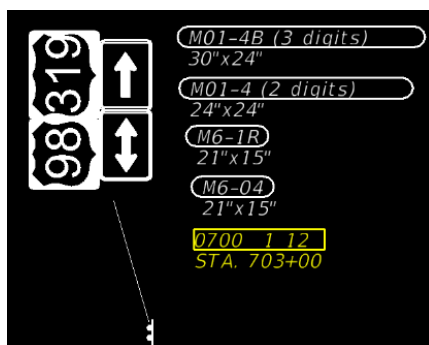
Notice the Pay Item information is different from the previous assembly you placed. This is because of the additional square footage of the panels. This is automatic and controlled by the signs.xml file, so the designer will not have to make the selection. The data is placed on the post when placed.

17. Select **Confirm Post**.
18. Select **Place Panel**.

19. Make sure *Rotation* is set to **Relative** and *Place on Alignment* is checked.
20. Select **Place Panel** and click near the *Station 703* as shown below.



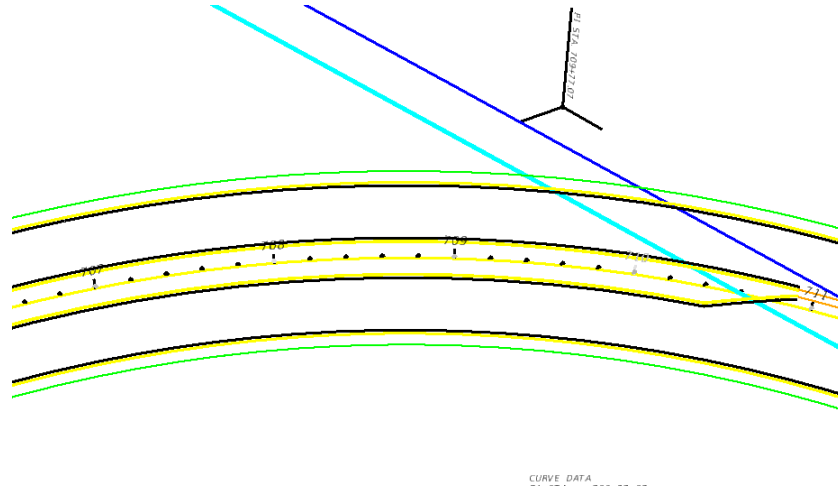
21. Select **Place Post** and Select close to Station **703+00** just outside the Sidewalk.
22. Click **Finish Assembly**, then select the **Labels** tab.
23. Select **Place Panel Label**, select one panel at a time and place the label. You do not need to select the Place Panel Label again, due to the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



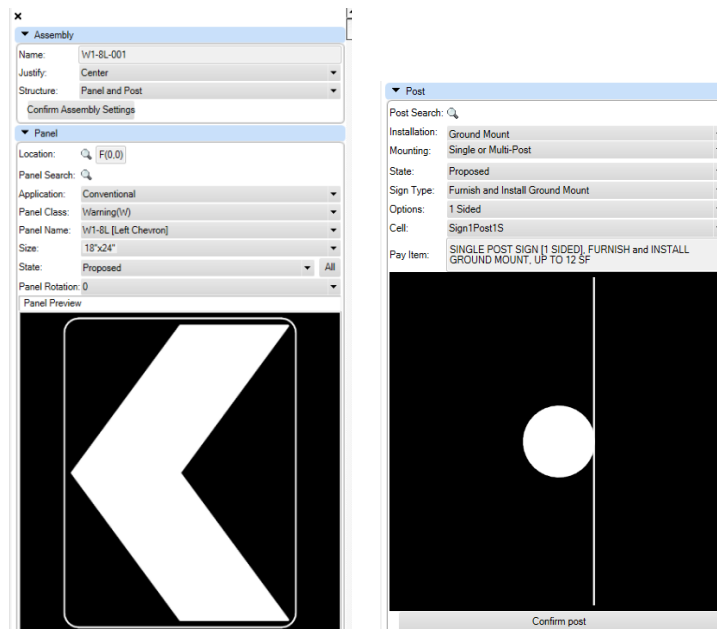
Exercise 2.5 Creating and Placing a Sign Assembly using 3 methods (Part 1)

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.

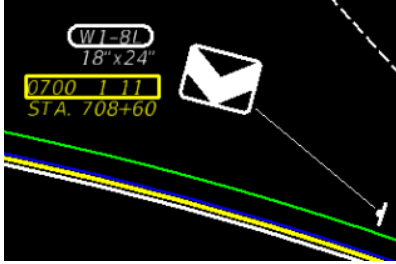
1. Continuing in the *DSGNP01.DGN* switch to the **FDOT Ribbon** and select the **2 Point Twist** command.
2. Rotate and zoom to the area as shown below.




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.

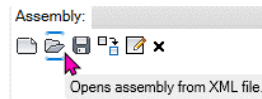


5. On the Sign Tool switch to the Assembly Creation tab.
6. Click on the save assembly button .
7. Name the assembly **W1-8L** & press **Save**.

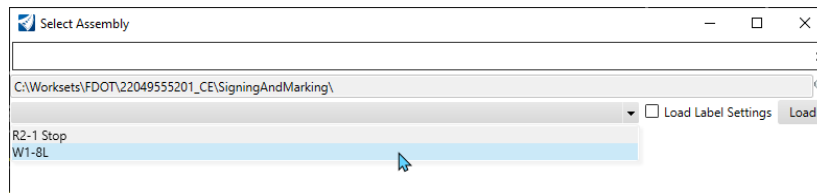
Exercise 2.6 Placing same sign assembly using a saved xml file (Part 2)

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

1. Continue working in the *DSGNP01.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.

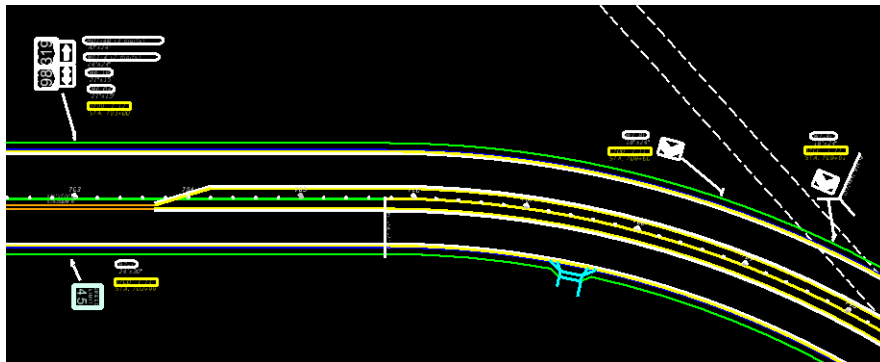
1. Continue working in the *DSGNP01.DGN* file.
2. Copy the previously placed assembly including labels using the *Copy Assembly* located on the *Tools and Settings* tab.
3. Place it around Station **710+50**.
4. Notice how the post rotates relative to the alignment and the station label updates. If the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



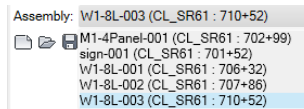
Exercise 2.8 Reviewing the Sign Assembly Inventory in the Design File

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.

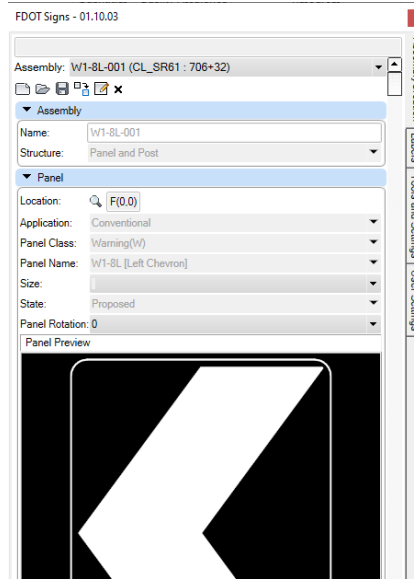


1. Continue working in the *DSGNP01.DGN* file.
2. Close the Sign tool and Reopen it.
3. Click on the Assembly pulldown list.



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.
5. From the assembly list select the **W1 8L-001** sign.

6. 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.



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

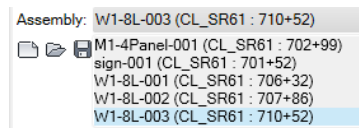


Note When re-labeling an assembly a warning message alerts you that you are about to delete an existing label and replace it with the new label, select ok to replace the label.

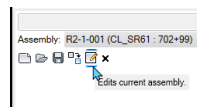
Exercise 2.9 Editing an Existing Assembly (Part 1)

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.



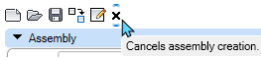
5. Select the size button and pick the **30"x36"**.



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.



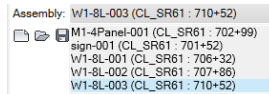
10. When edits are complete, switch to the **Assembly Creation** tab and select the **X** button to end the editing

session. 

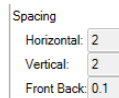
Exercise 2.10 *Editing an Existing Assembly (Part 2)*

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

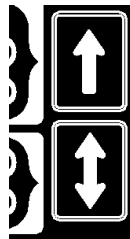
1. Continue working in the DSGNSP01.DGN file.
2. Open the sign tool if not already open.
3. On the sign pull down list select the **M1-4Panel-001** assembly.



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



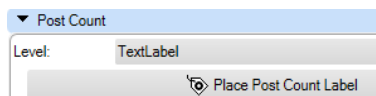
7. Switch back to the **Assembly Creation** tab and select **Confirm Assembly**.
8. Select **Place Panel** and replace the panel in the design file like you have done before.
9. The panels spacing should match image below.



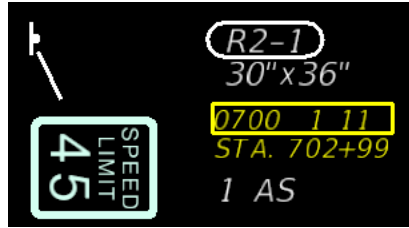
Exercise 2.11 *Labeling Assembly Count*

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.

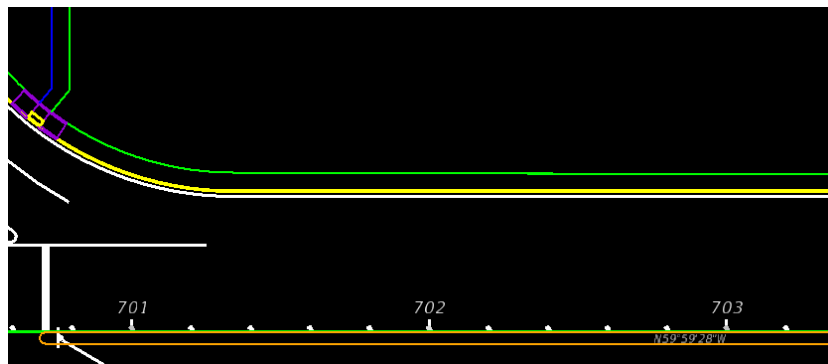


7. The designer also has an option to edit the text label.

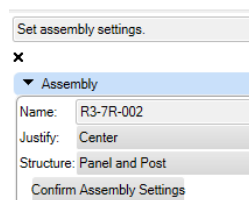
Exercise 2.12 *Placing the same Sign Assembly Twice (Part 1)*

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.

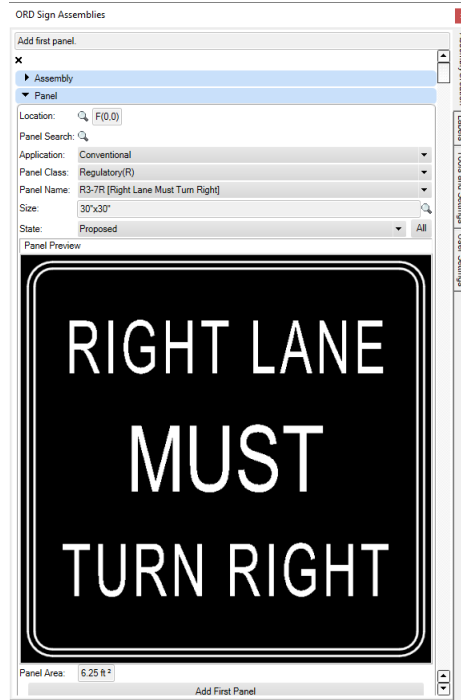
1. Continue working in the DSGNSP01.DGN file.
2. Zoom to the area shown below.



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



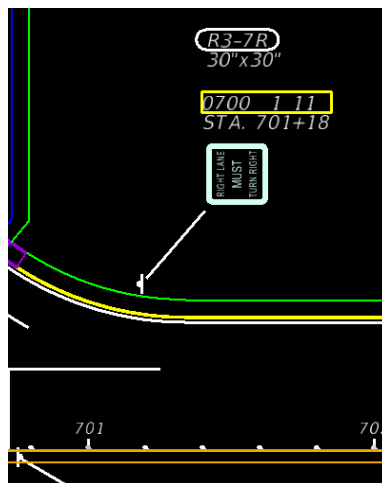
4. Select **Confirm Assembly Settings** to continue.
5. Fill in Panel section as image shows below.



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

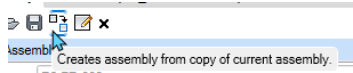


8. Select **Confirm Post** to continue.
9. Place **Panel** and then **Post** close to Station **701+18** on the Left side.
10. Select **Finish Assembly** and then **Label Panel & Post**. Drawing should look like image below.

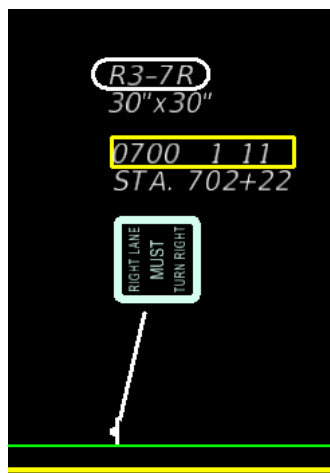


Now we will utilize the Create Assembly from Copy to save time placing the second assembly.

11. Switch back to the **Assembly Creation** tab.
12. Select the **assembly from copy** button.



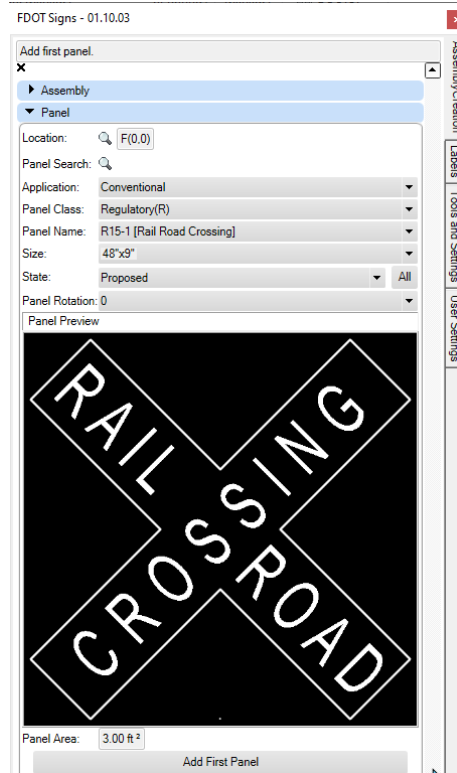
13. Notice how the parameter boxes are active now and will accept changes and the name is the same as the other assembly but it gets the next number.
14. Nothing is changing in the panel section so click on **Confirm Assembly**.
15. Nothing is changing in the post section so click on **Confirm Post**.
16. **Place and Label** Assembly. See image below.



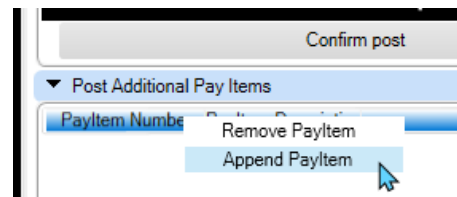
Exercise 2.13 *Adding additional pay items to posts*

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

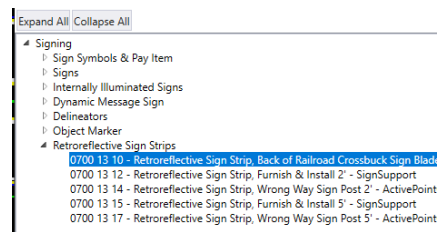
1. Continue working in the DSGNSP01.DGN file.
2. Start a new sign assembly.
3. Name it **Railroad** and match the image below



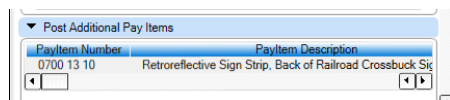
4. Select **Add First Panel**.
5. Select **Confirm Assembly**.
6. In the Post additional Pay Items **Right Click** on the PayItem Number and select **Append PayItem**



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

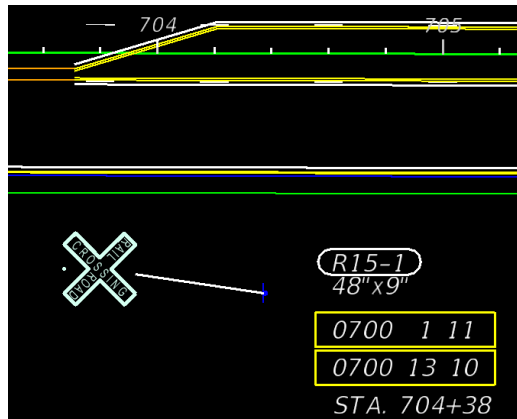


8. Select **OK**. Notice the list populates with the selection made from the database.



9. Select **Confirm Post**.
10. Place Panel and Post around Station **704+00** and select **Finish Assembly**.

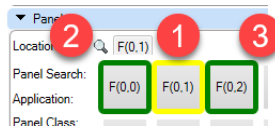
11. Label Assembly.



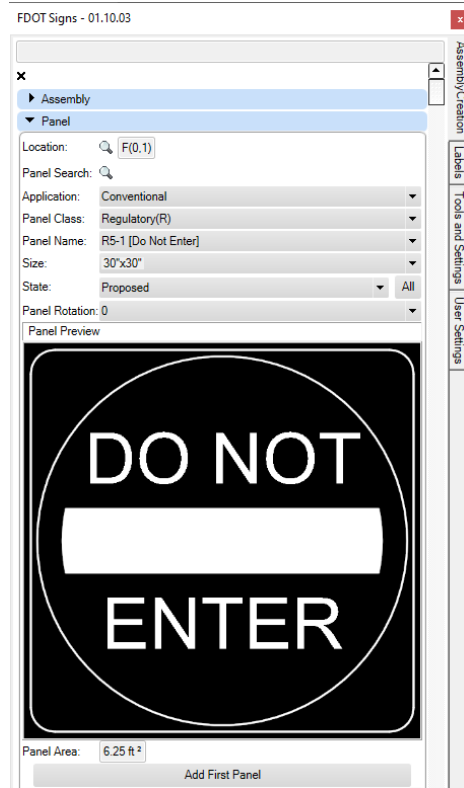
Exercise 2.14 *Adding Rotated Panels to A Sign Assembly*

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

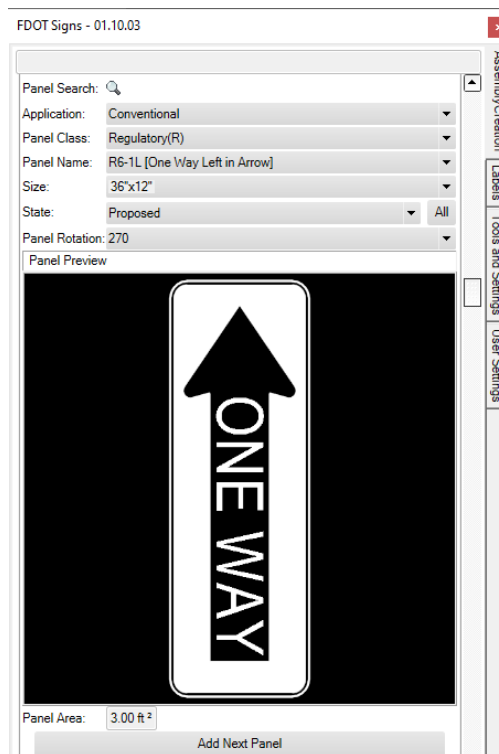
1. Continue working in the DSGNSP01.DGN file.
2. Start a New Assembly and name it **DoNotEnter**. Match image below for the first panel.
3. Use the Location Grid shown for the locations of the three panels.



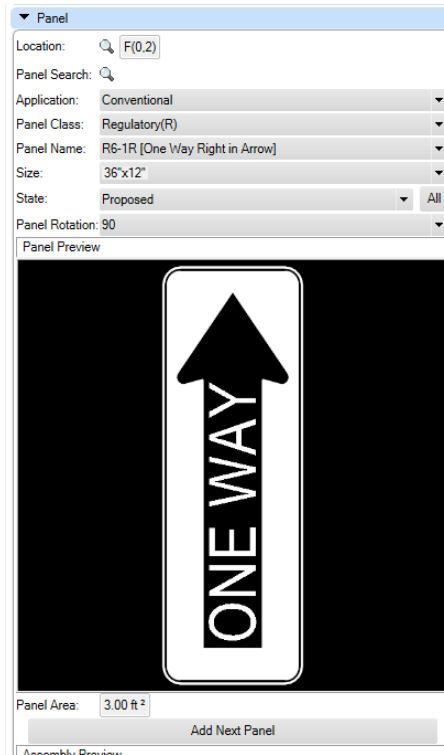
4. Select **Add First Panel**.



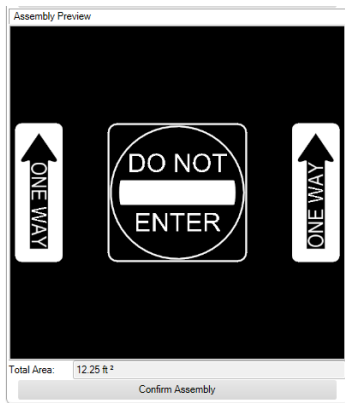
5. For the second panel make the following selections, then select **Add Next Panel**.



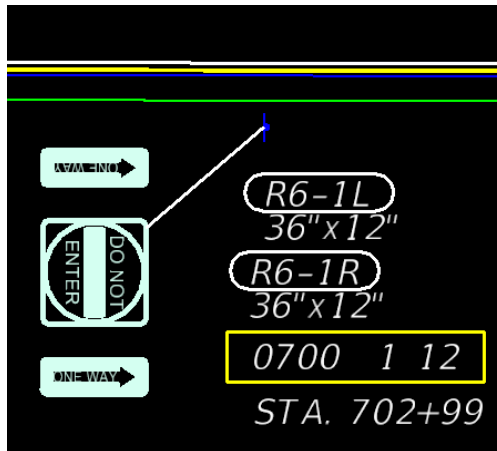
6. For the third panel make the following selections, and then select **Add Next Panel**.



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



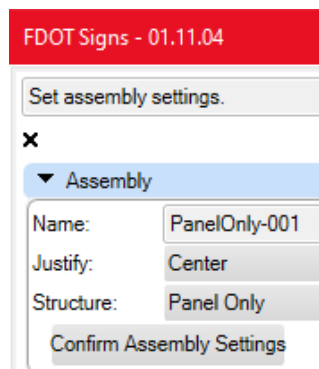
8. The post information auto populates and is correct. Select **Confirm Post**.
9. Make sure the alignment is still filled in and select **Place Panel** and then **Place Post**.
10. Select **Finish Assembly** and **Label Panels and Post**.



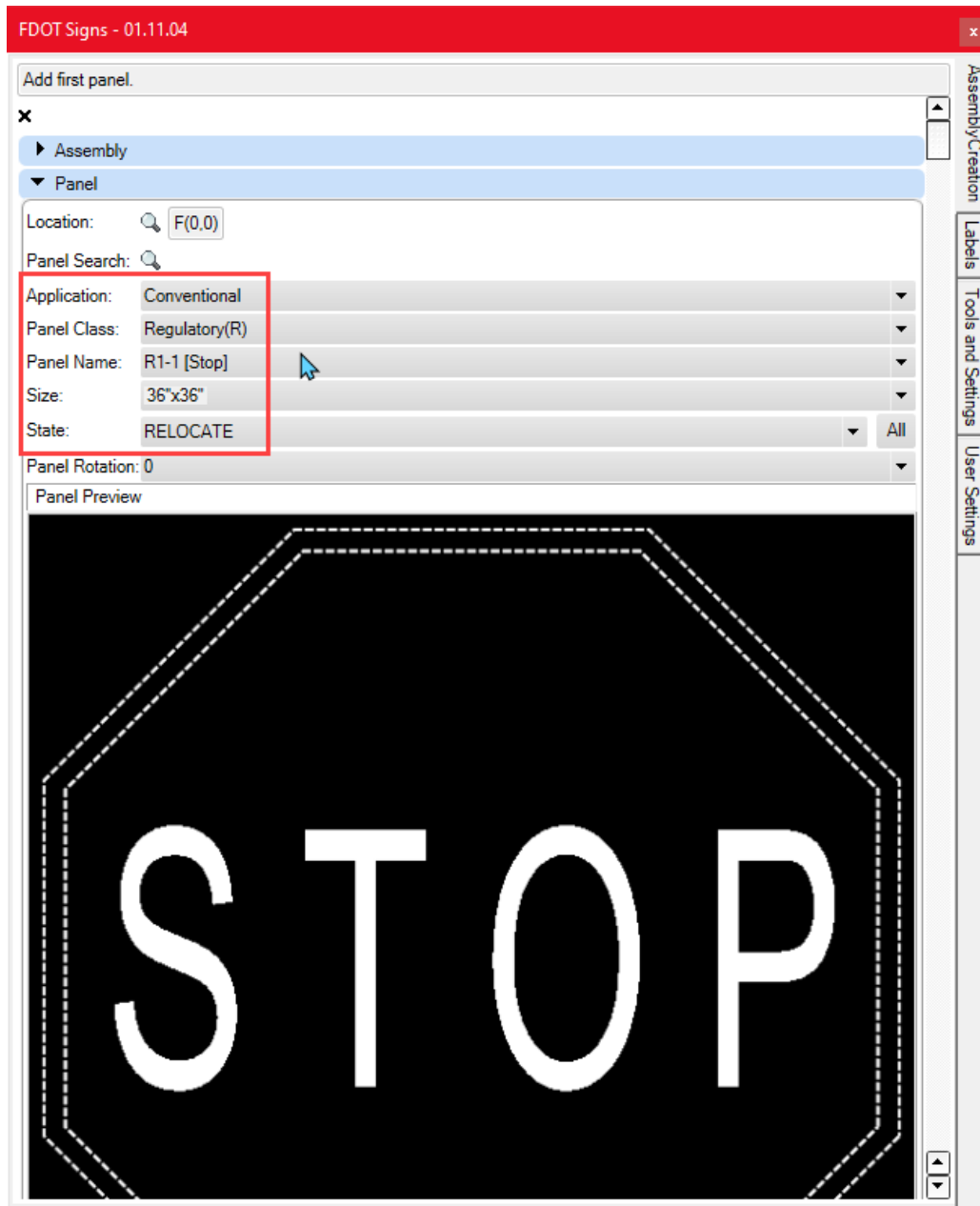
Exercise 2.15 *Placing a Panel Only Option*

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.

Set post options.

Post Search:

Installation: Ground Mount

Mounting: Single or Multi-Post

State: RELOCATE

Sign Type: Furnish & Install Ground Mount

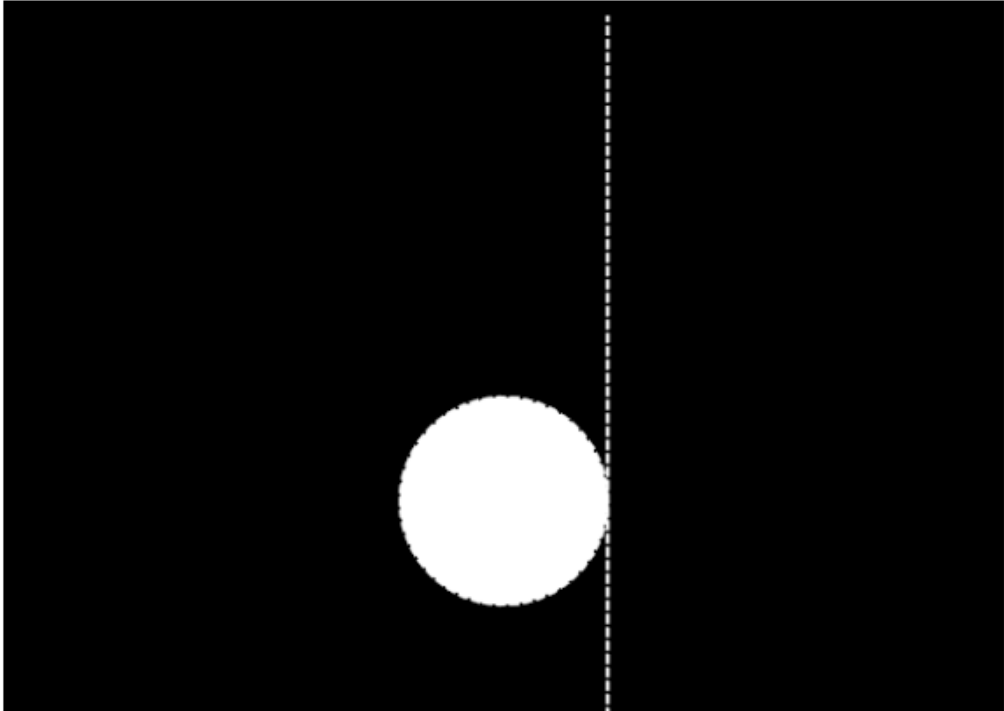
Options: 1 Sided

Cell: Sign1Post1S

Pay Item:

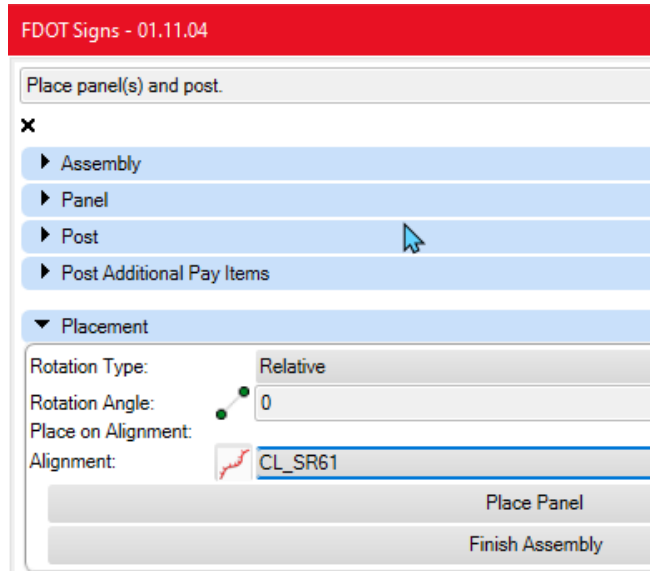
Name: 0700 1 50

Description: Single Post Sign, ground mount + RELOCATE

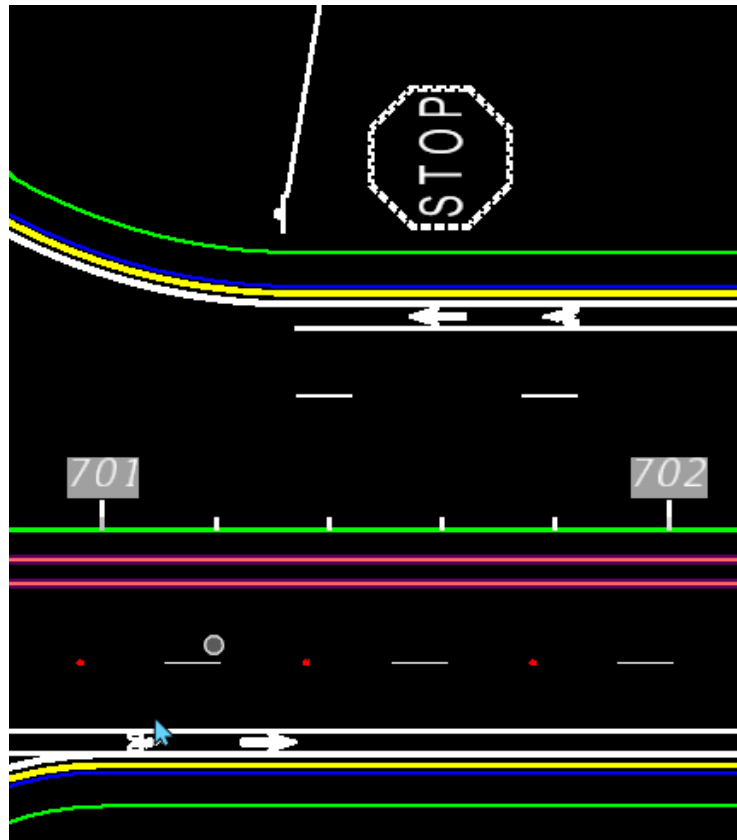


AssemblyCreation
Labels
Tools and Settings
User Settings

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)' expanded to 'Cell: PanelOnly-001', which contains 'Items' and 'Annotation Cell'. The 'Annotation Cell' item is highlighted with a red box. The properties table below is also 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
Geometry	
Groups	
Extended	
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

			1			CL SR61	709+56.88	709+56.88	LT	8536
0700 1 12	Single Post Sign, E&I Ground Mount	AS	1	1		CL SR61	703+68.84	703+68.84	LT	8437
0700 1 50	Single Post Sign, Relocate	AS	1	1		CL SR61	701+47.21	701+47.21	LT	11662
0709 11131	Traffic Stripe-White Reactive Compo	GM	0.2345	0.465		CL SR61	700+71.00	713+29.25	RT	10992
			0.2302			CL SR61	701+34.00	713+29.25	LT	11016
0710 11101	Painted Pavement Markings, Standa	GM	0.0328	0.986		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.

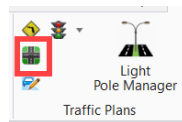
INTRODUCTION

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

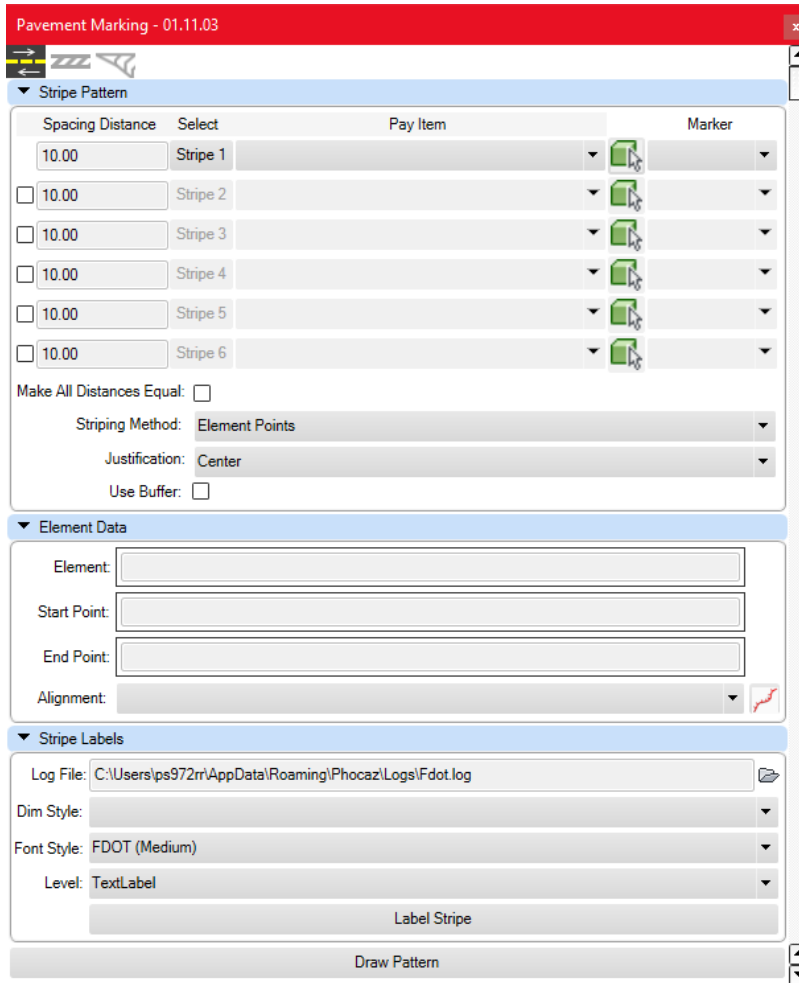
- **Pavement Marking tool-** An application within the FDOT WorkSpace that is used to draw Pavement Marking in accordance with the MUTCD and FDOT CADD standards.

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

PAVEMENT MARKING TOOL

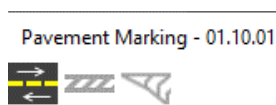


Many of the Traffic Plan items are simple 2d line styles drawn and have pay item information already placed for future Quantity Reports. To draw Pavement Markings with the tool, select the Pavement Marking icon on the Traffic Plans group on the FDOT Ribbon.



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 'Pavement Marking - 01.11.03' window. The 'Stripe Pattern' panel is expanded, displaying a table with columns for Spacing Distance, Select, Pay Item, and Marker. Below the table are options for 'Make All Distances Equal', 'Striping Method' (set to Element Points), 'Justification' (set to Center), and 'Use Buffer'. The 'Element Data' panel below contains input fields for Element, Start Point, End Point, and Alignment. The 'Stripe Labels' panel includes a Log File path, Dim Style, Font Style (set to FDOT (Medium)), and Level (set to TextLabel). A 'Label Stripe' button is at the bottom of this panel. A 'Draw Pattern' button is located at the very bottom of the interface.

Spacing Distance	Select	Pay Item	Marker
10.00	Stripe 1		
<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: Center

Use Buffer:

Element:

Start Point:

End Point:

Alignment:

Log File: C:\Users\ps972r\AppData\Roaming\Phocaz\Logs\Fdot.log

Dim Style:

Font Style: FDOT (Medium)

Level: TextLabel

Label Stripe

Draw Pattern

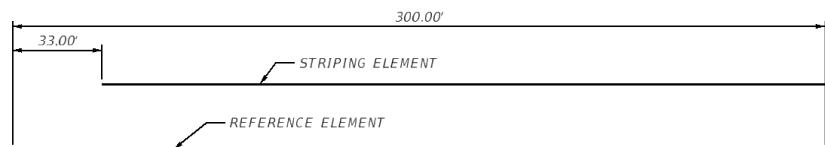
The designer can either draw a single pattern or draw up to 6 patterns at once with or without RPM's. The designer can enter in the distance between stripe patterns along with the offset distance from the source element, the distance is measured from the center as a default, however the justification 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.
- **Marker**- The designer can select from a pulldown list of different RPM's to place RPM's along the striping pattern selected. At the time of this manual update this feature has been temporarily disabled due to the RPM's not quantifying, when the issue is resolved this feature will be re-enabled.
- **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.



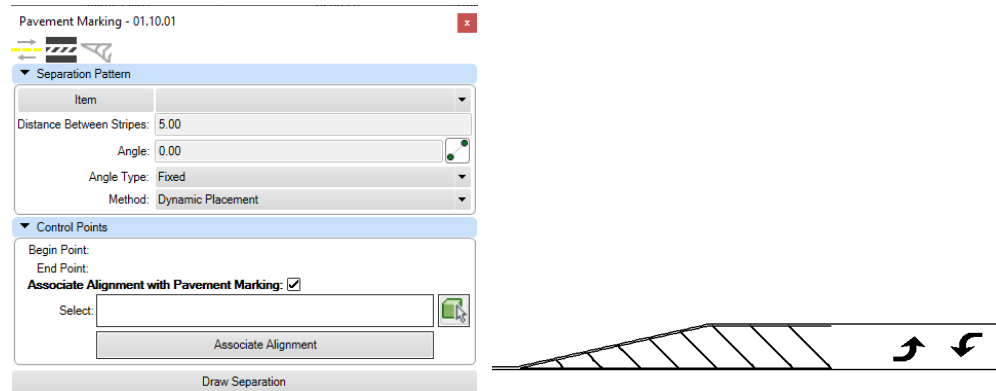
ELEMENT DATA

- **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 to troubleshoot 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

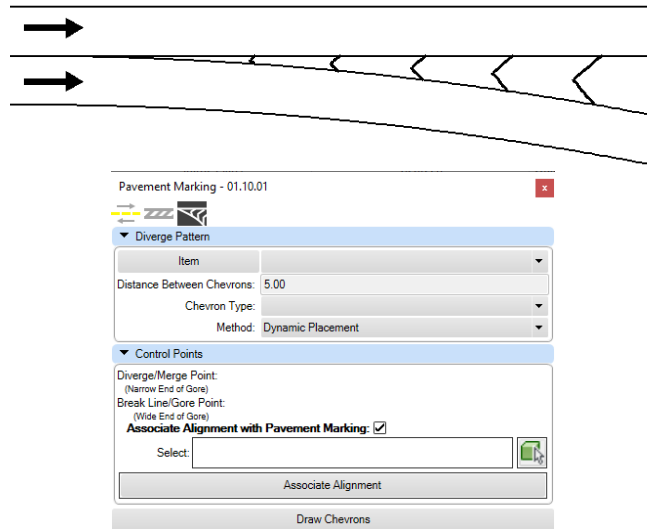
- **Item** – Select this button to open the Pay Item Database to select a striping pattern. The list to the right contains a pulldown that lists the history of previously placed patterns.
- **Distance Between Stripes** - Allows the designer to input the distance between stripes.
- **Angle** – Allows 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 pattern 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 pattern where no existing line work exists.
 - **By Entity**- Allows designer to draw pattern on top of existing linework.

CONTROL POINTS

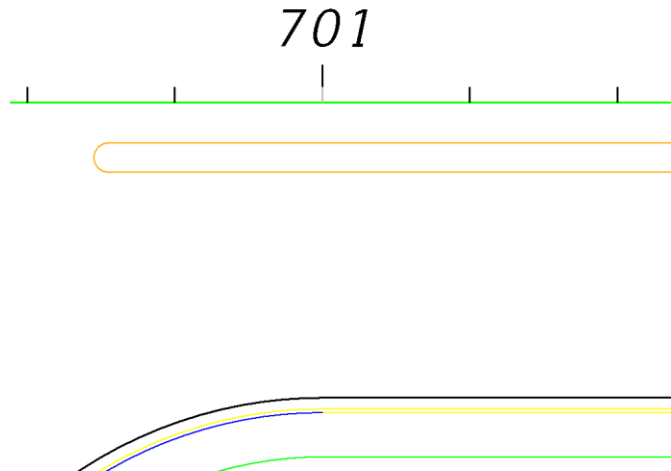
- **Diverge/Merge Point** – List the coordinates of the narrow end of gore.
- **Break Line/Gore Point** – List the coordinates of the wide end of gore.
- **Associate Alignment with Pavement Marking** – When toggled it will place all patterns associated with the selected alignment. To select an alignment, 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.


EXERCISES

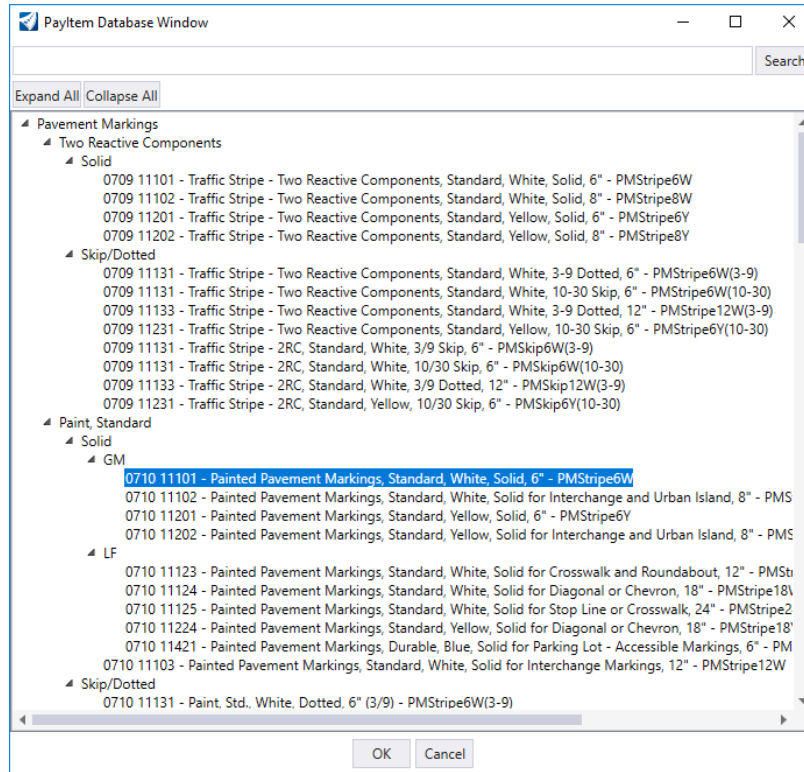
Exercise 3.1 Draw Striping Patterns

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.

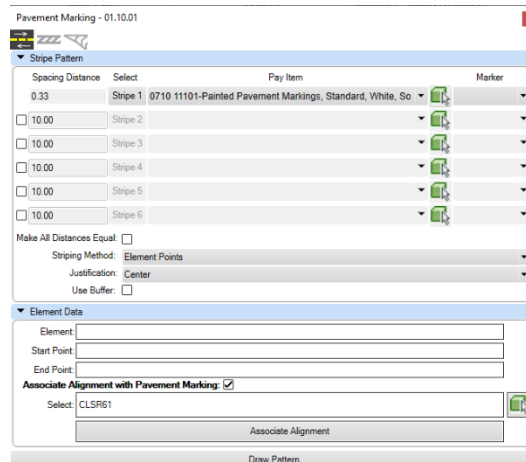
1. Open or continue working in *DSGNP01.DGN*.
2. **Twist View** and zoom to the area shown below.



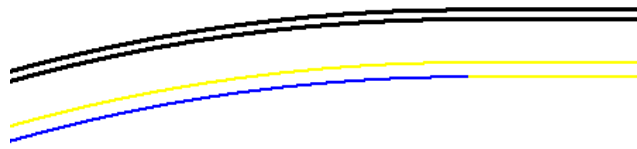
3. On the FDOT Ribbon select the Pavement Marking Tool. 
4. Select the **Stripe 1** button to open the Pay Item Database Window.



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



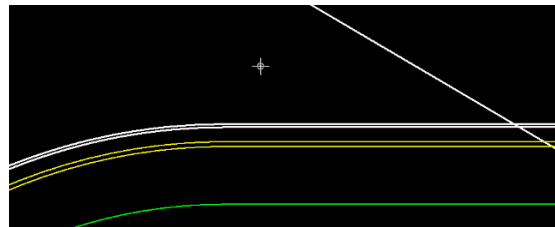
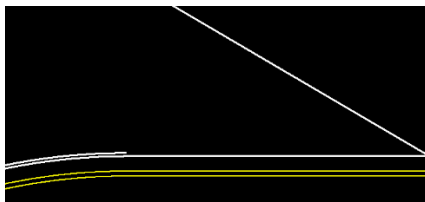
10. Click on **Draw Pattern** and select the EOP along the arc and left click to the outside. Your drawing should look like below:



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


PMTIT	
PayItemNumber	0710 11101
PayItemDescription	Painted Pavement Markings, Stanc
UnitOfMeasure	GM
Pay Item	0710 11101
Side	stripe00
Length	118.328086943104
Stripe Length	0
Skip Length	0
Alignment	ALGNRD01.dgn:Default:CL_SR61

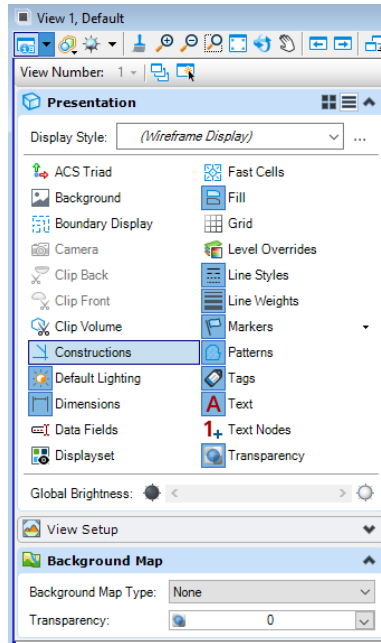
12. Using the same pattern and criteria as before select **Draw Pattern**.
13. Next to the previously placed striping select the tangent portion of the EOP.
14. Draw the same pattern on the curve and tangent on the opposite side of the road.
15. The drawing should look like image below, save your file before continuing.



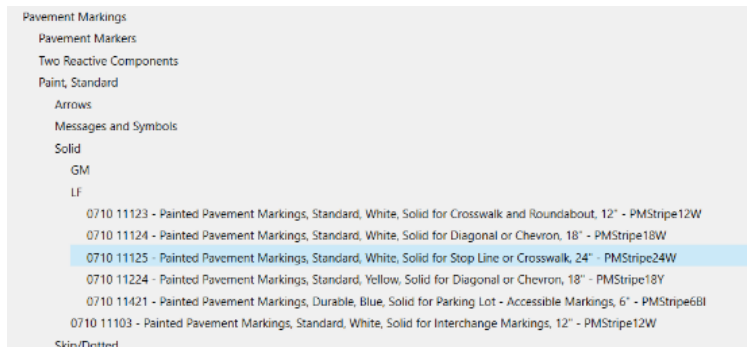
Exercise 3.2 Placing a 24" Stop Bar

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.

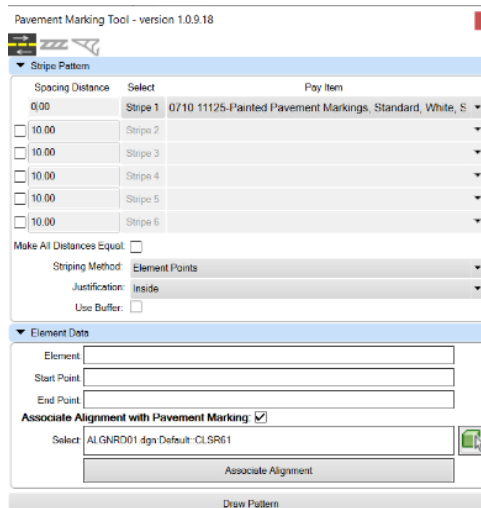
1. Continue working in the *DSGNP01.DGN* drawing.
2. Open the **Pavement Marking** tool.
3. Select the **View Attributes** button  and turn on constructions to see the construction linework in the drawing (or press F7).



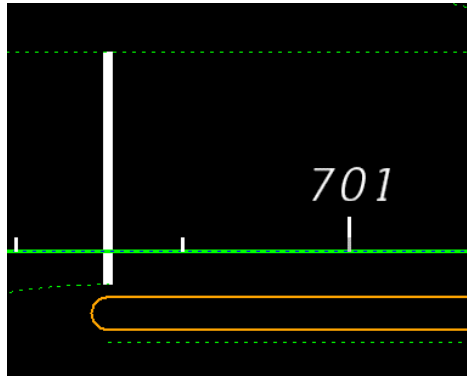
4. Select the **Stripe 1** button and browse the database for a **24” White Stop Line (0710 11125)**, select it and click **OK**.



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

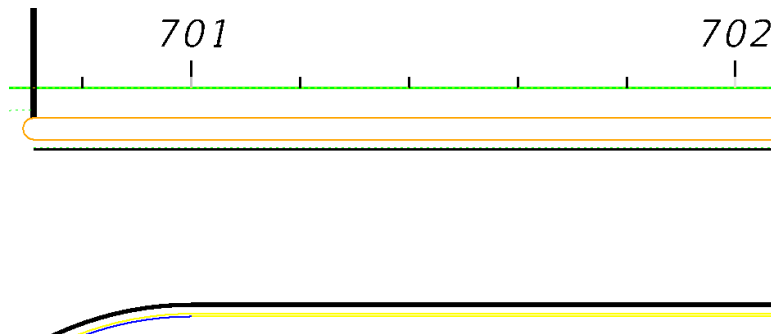


6. Select the **Green Select Button** and select the **Alignment** in the file. Make sure the alignment name is shown and is correct before continuing. If the alignment is still listed in the select box disregard and continue.
7. Select **Draw Pattern** and pick the Red Dashed Construction Line representing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

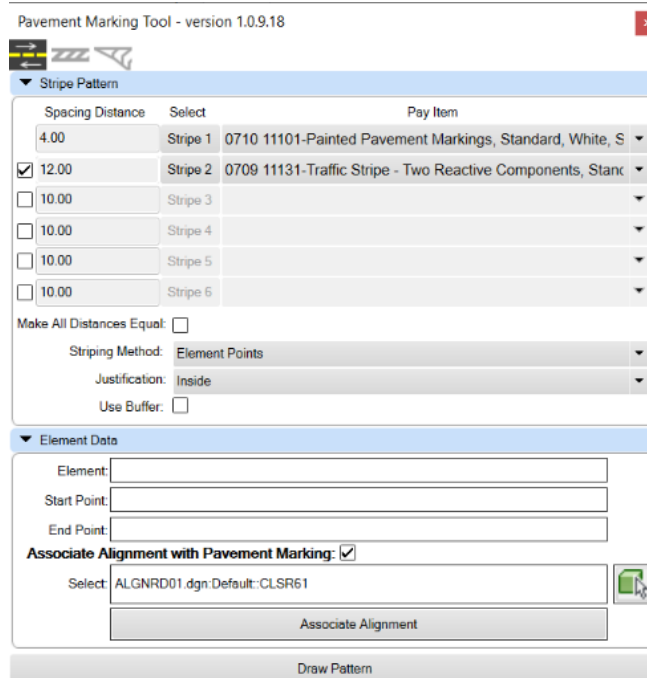


Exercise 3.3 Placing two different Patterns

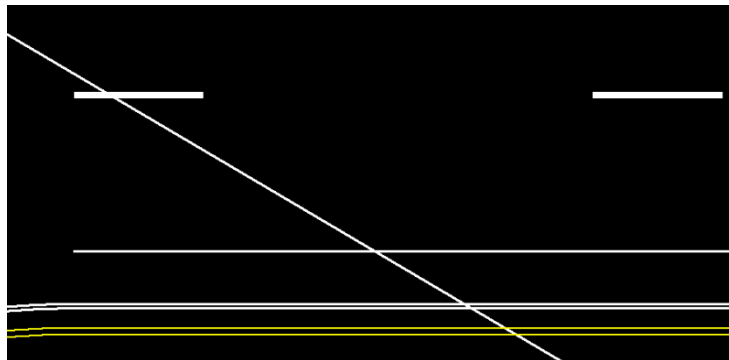
In this exercise, the designer will place two patterns, one representing the Bike Lane and the other a 10/30 Skip pattern for a lane line. Zoom to the area shown below.



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.



1. 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.
2. Select **Draw Pattern** and pick the tangent EOP pattern that was placed in an earlier exercise.
3. **Left Click** in the Roadway side to place patterns.
4. Your file should look like below.

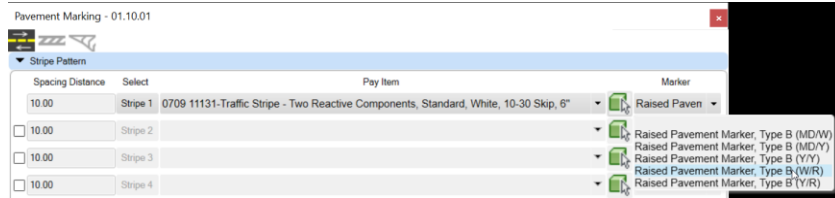


Note Notice as you make striping selections the history list fills in with the 10 most used patterns, this is a useful time saving feature. Some designers pick the 10 most used patterns before using the application so that when they do the desired patterns will already be in the list.

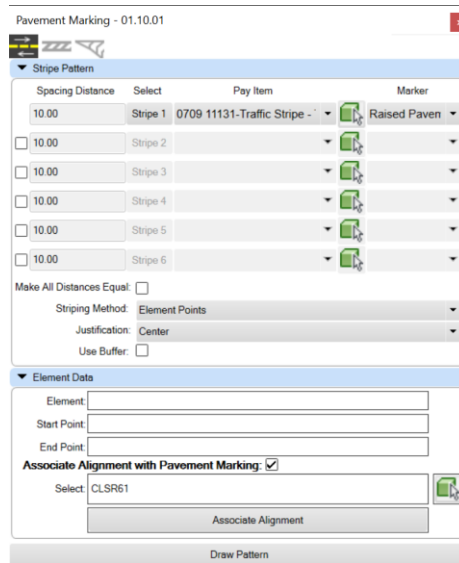
Exercise 3.4 Placing RPM's within a 10/30 Skip Pattern

In this exercise the designer will draw a White 10/30 skip pattern with a red/white rpm in the pattern. The purpose of using this feature is to rapidly place RPM's with a 10/30 skip that will be on an uninterrupted length. This feature is not meant to place RPM's near or at intersections since there will be many and will need to be placed with an offset. Please use Place Cell Group for custom and precise location placement of RPM's.

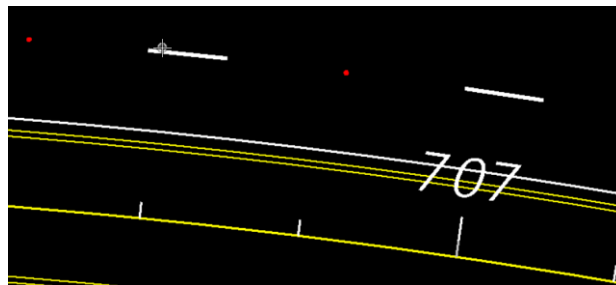
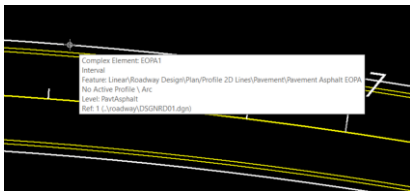
1. Continuing in the *DSGNP01.DGN* file.
2. Open the **Pavement Marking** tool, if not open.
3. Match image below for criteria.



4. Select the alignment for association. Match image below for remaining criteria.



5. Select **Associate Alignment**.
6. Select **Draw Pattern**.
7. Select the EOP around Sta **707+00** and left click into the travel way.



Exercise 3.5 Drawing a freeform Arc

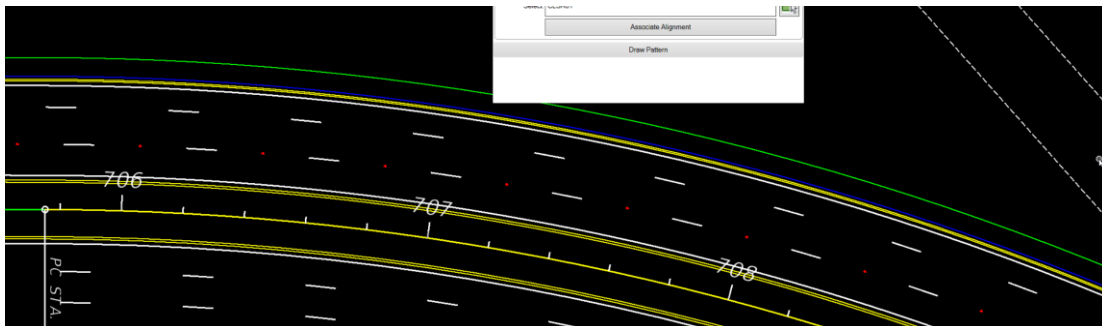
In this exercise, the designer will draw a striping pattern along an arc using the freeform feature.

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.



8. Notice the command line give 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 image below.

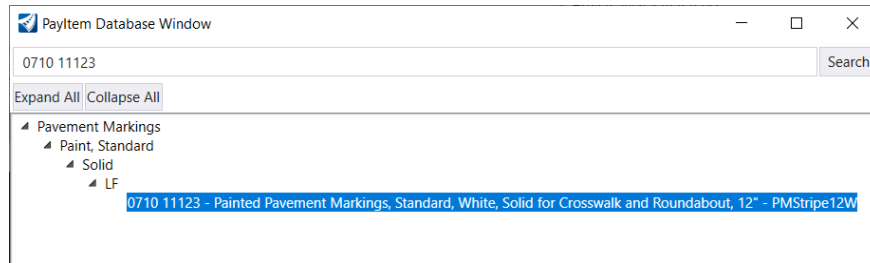


Note The freeform Line and Arc will behave differently based on the different scenarios that you run across. It is recommended that you practice using these two features often so you can generate expected results in your design files.

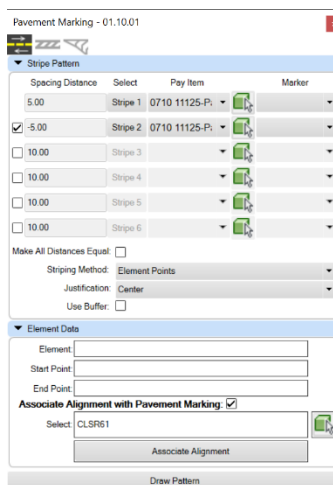
Exercise 3.6 Placing and Editing a Crosswalk

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.

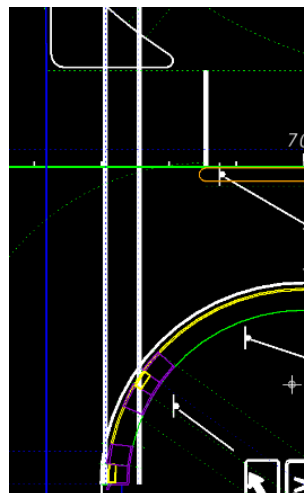
1. Continuing in the *DSGNP01.DGN* file.
2. Open **Pavement Marking** tool, if not already open.
3. Pull down the history list and select the **12" White Crosswalk (0710 11123)**, if the Pay item is not in the list browse to it in the database.



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



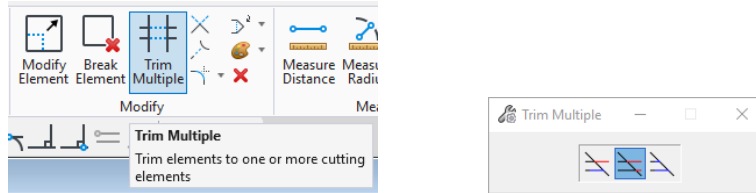
8. Select the green select button and pick on the Alignment in the file. Make sure the alignment name is shown and is correct before continuing. If the alignment is still listed in the select box disregard and continue.
9. Select **Draw Pattern** and pick the Red dashed construction line and left click. 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.

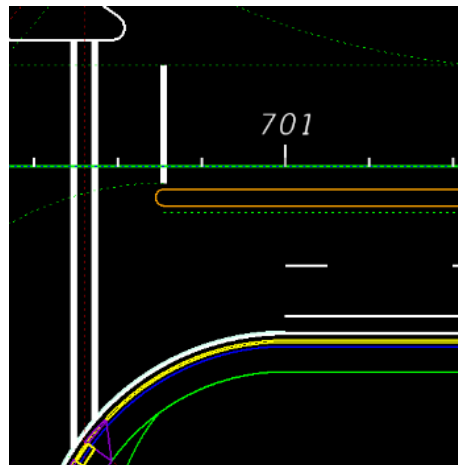
Note Be aware if you break the striping pattern line type, one half will contain the appropriate pay item data and the other half will be stripped of all pay item information, so try to use trim and extend for your manual editing.

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



- Select the white island line as the cutting element and pick the two crosswalk lines that will be trimmed away.

- 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.



- Drawing should look like image above.

Exercise 3.7 Adding Patterns inside Cross Walk

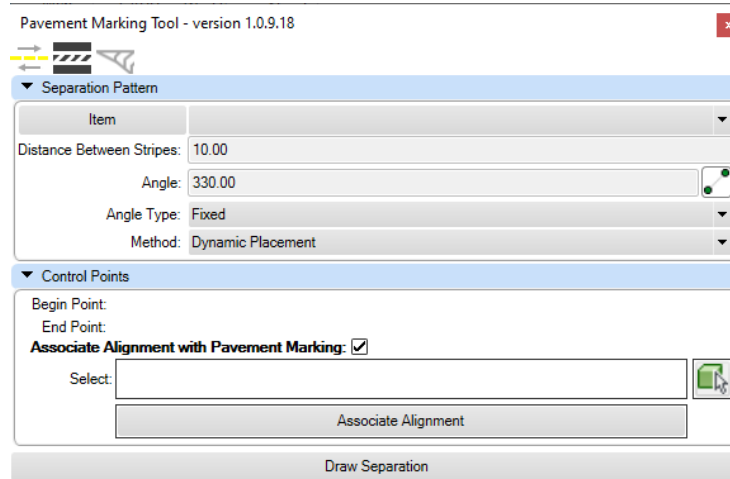
In this exercise the designer will use the Separation Mode in the Pavement Marking tool to place cross walk bars inside the previously placed cross walk.

- Continuing in the *DSGNP01.DGN* file.
- Open **Pavement Marking** tool if not already open.

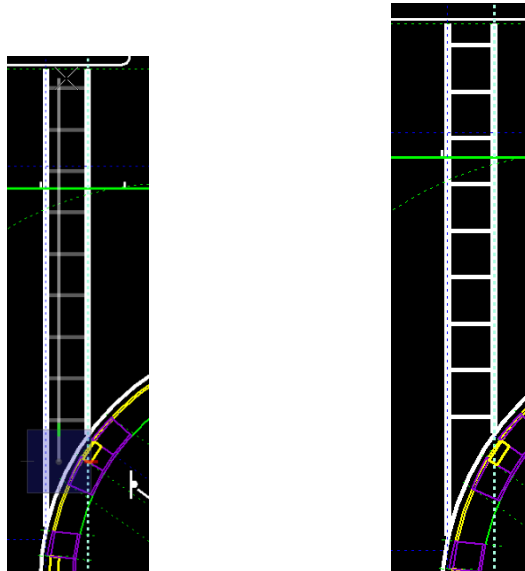
- Switch to the **Separation Mode**. 

- 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.



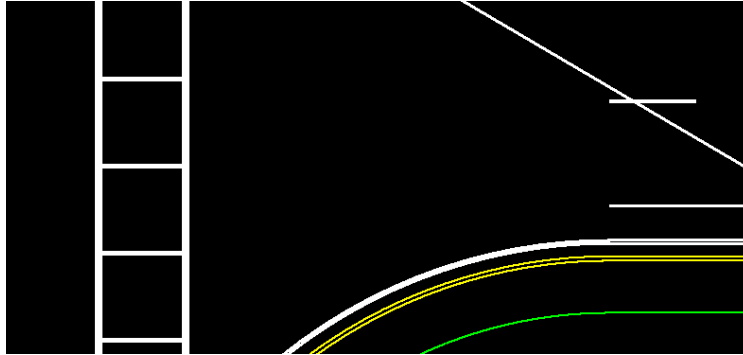
6. Select the **Green Select Button** and pick on the **Alignment** in the file. Make sure the alignment name is shown and is correct before continuing. If the alignment is still listed in the select box disregard and continue.
7. Select **Draw Separation** and select each side of the crosswalk, **Left 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 image below.



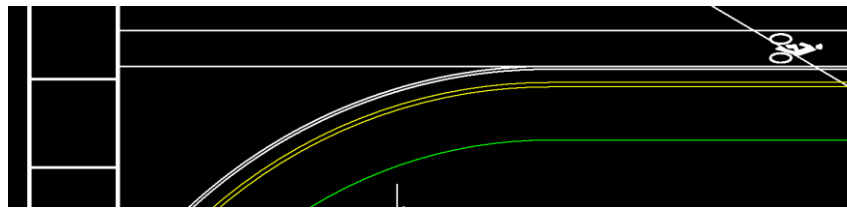
Exercise 3.8 Extend Bike Lane Striping and 10/30 Skip to Intersection

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

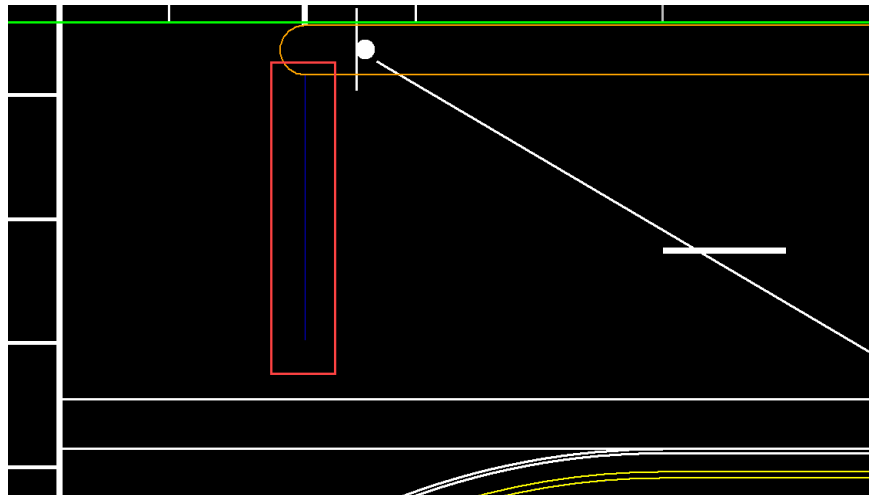
1. Continue working in the *DSGNSPO1.dgn* file.
2. Zoom to the intersection as shown below.



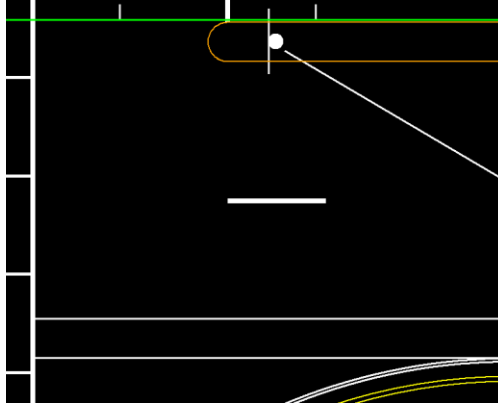
3. **Extend** the Bike Lane to the Crosswalk as shown below.



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



5. **Extend** the 10/30 skip line to the temp construction line.
6. **Delete** temp blue construction line.
7. Your drawing should look like below.



Exercise 3.9 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 *DSGNSPOI.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.

Pavement Marking - 01.10.06

Stripe Pattern

Spacing Distance	Select	Pay Item	Marker
4.00	Stripe 1	0710 11101-Pai	
<input checked="" type="checkbox"/> 12.00	Stripe 2	0709 11131-Tra	
<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:

Start Point Buffer: 0.00

End Point Buffer: 0.00

Element Data

Element:

Start Point:

End Point:

Associate Alignment with Pavement Marking:

Select: CL_SR61

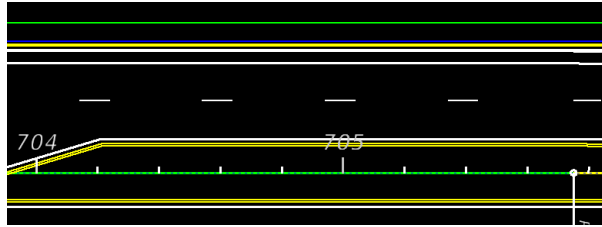
Associate Alignment

Log File Location: C:\Users\ps972r\AppData\Roaming\Phocaz\Logs\FDOTPMTORD.Log

Draw Pattern

Label Stripe

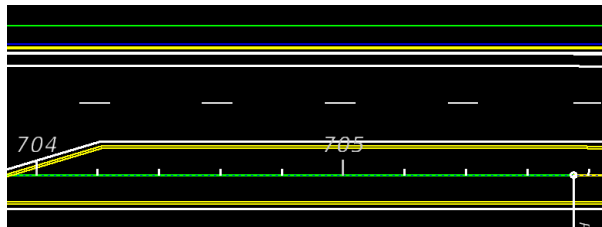
6. Select **Draw Pattern** and select the EOP pattern you placed in a previous exercise.
7. Your drawing should match image below.



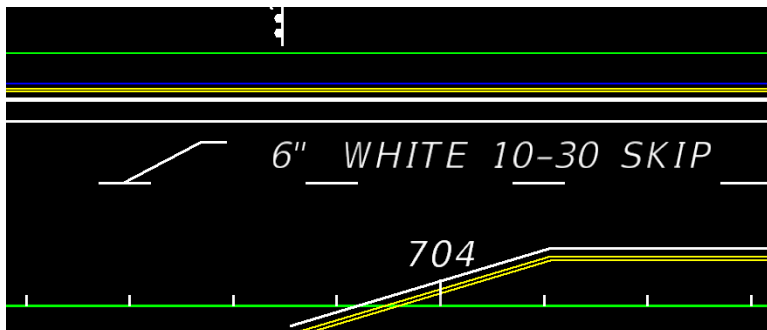
Exercise 3.10 *Placing a Striping Label*

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

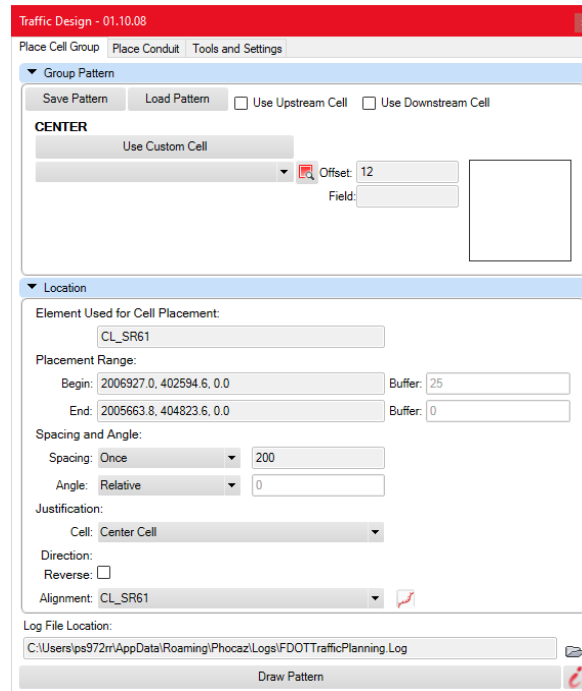
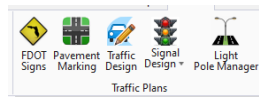
OBJECTIVE

The objective of this chapter is to provide an overview of the traffic design Application, which contains **Place Cell Group**, **Place Conduit**, and **Pay Item Update** tool.

INTRODUCTION

This chapter demonstrates the tools that are available within the traffic planning suite.

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 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.

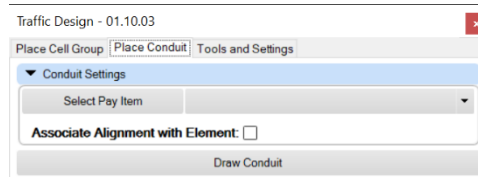
Direction Reverse – This will reverse the selected elements direction, which effects how the cell rotates about the source element. If you find your cell is not rotating the direction you expect toggle this option on, and the preview should change rotation of the cell in preview mode.

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.

PLACE CONDUIT



This tool is used to draw conduit between cells such as light poles. The designer selects from a list of 5 different types of conduits. The Pay Item database controls these options and when drawn the symbology including the Pay Item number is correctly placed.

Note The conduit draw tool within the traffic design will be going away, the designer should use the conduit option in the signal application. The reason is there are more options available and additional conduit types, another advantage of using the signal app conduit function is you can append multiple pay items on a single run of conduit.

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.

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.

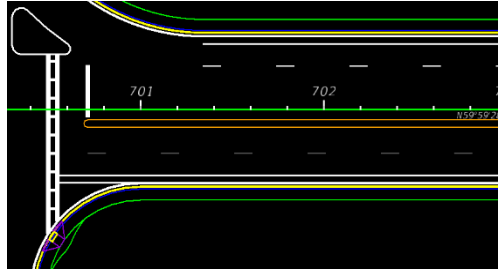
New Value – This is the number you want use to replace the current value.

EXERCISES

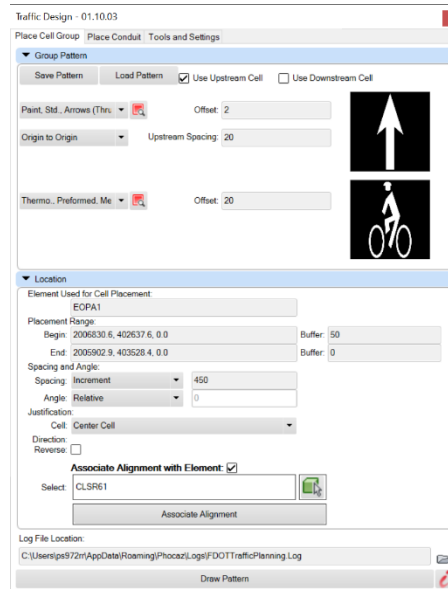
Exercise 4.1 Placing Painted Pavement Message

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

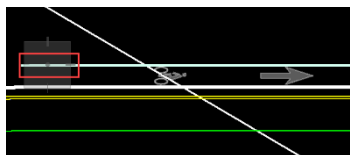
1. Continuing in the *DSGNP01.DGN* file.
2. Zoom to Station **701+00** area as shown below.



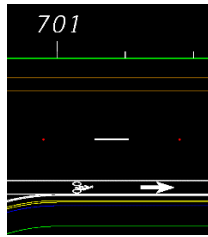
3. Open **Traffic Planning** and stay on the **Place Cell Group** tab.
4. **Toggle on** the Use Upstream Cell.
5. Select the **Red** Browse button on the top cell section and select a **Thru arrow (0710 11170)**.
6. Select the **Middle** browse button and select a **Bike symbol (0711 14160)**.
7. Set 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**.
13. Notice the alignment name in the select box. Match image below.



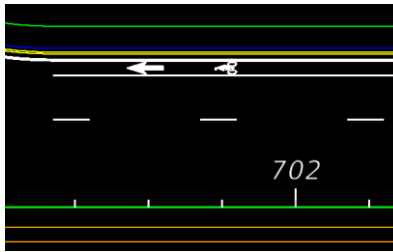
14. Select **Draw Pattern** and select the bike lane line as shown below.



15. 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.



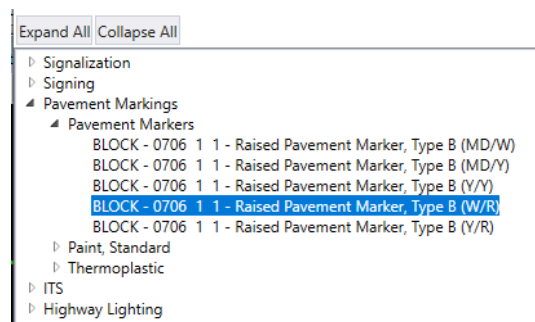
16. Place the same pattern on the opposite side of road in the Bike Lane. Drawing should look like below.



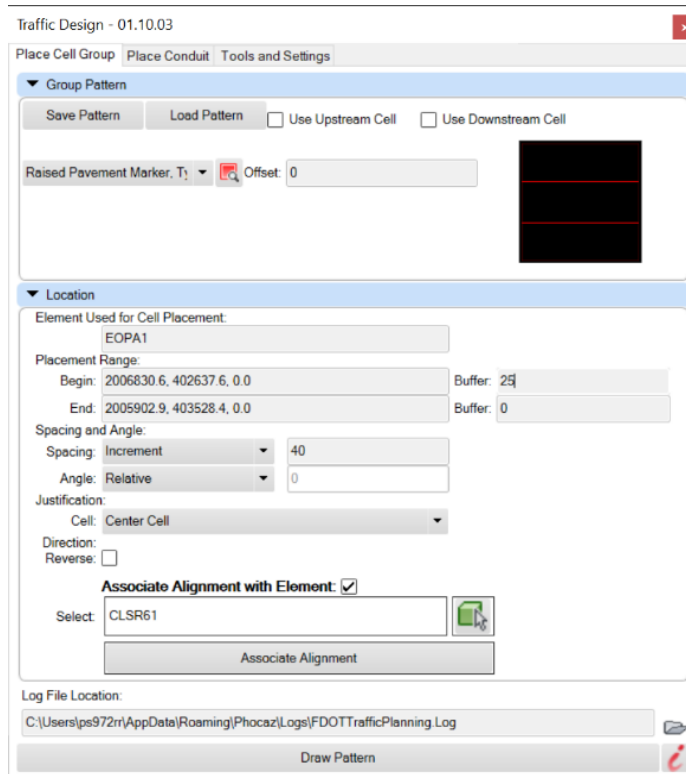
Exercise 4.2 Placing RPMs

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

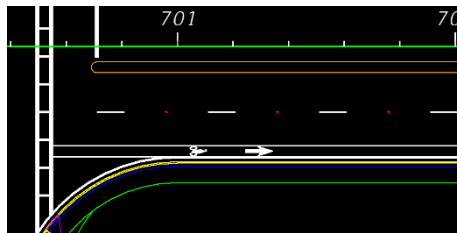
1. Continuing in the *DSGNP01.DGN* file.
2. Open the **Traffic Planning** app to get to the **Place Cell Group**.
3. **Untoggle** the top and bottom cell area if active. You will be using the middle cell area for this exercise.
4. Select the **Red** browse button and browse to pay item **0706 1 1 W/R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



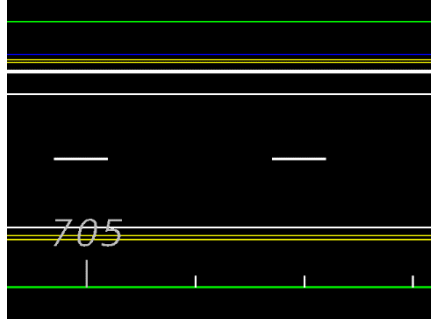
9. Select **Draw Pattern** and select the 10/30 skip we placed earlier, notice the preview of the rpms.
10. Make sure the rotation is set to **Relative**, if you look at the preview around a curve the rpms should be rotated correctly. It is best to check this while in preview mode, since you would have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



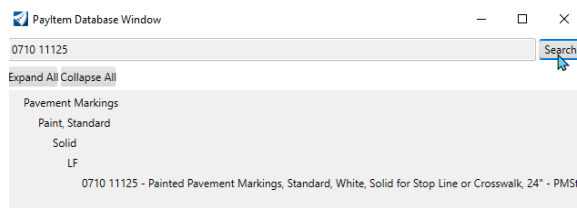
Exercise 4.3 Combination Striping and Painted Pavement Message

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.

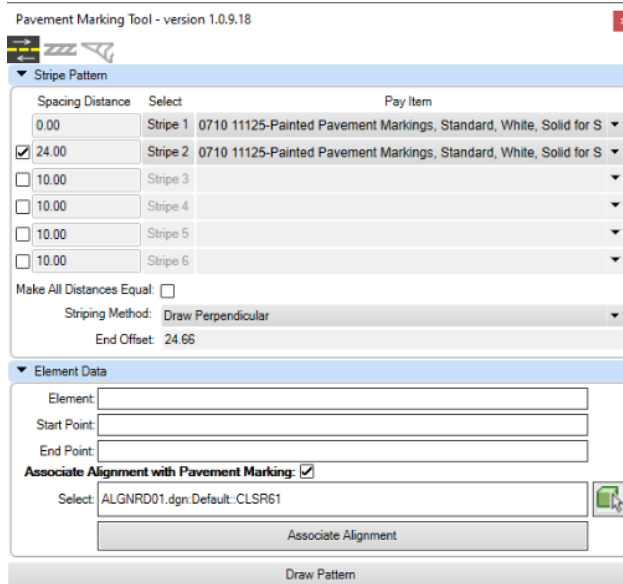
1. Continue working in the *DSGNP01.DGN*.
2. Zoom to left side of the roadway near Station **705** as shown below.



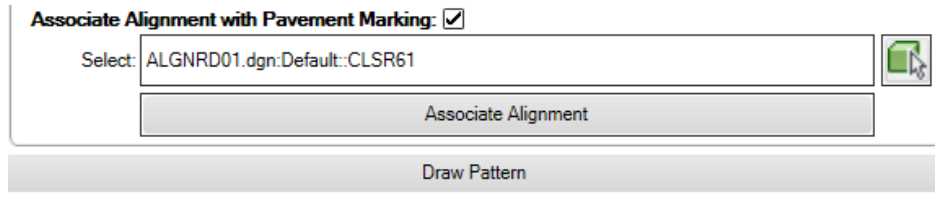
3. Open the **Pavement Marking Tool**.
4. Toggle on **Stripe Two** to make it active.
5. Set Stripe 1 Spacing Distance to **0** and Stripe 2 to **24**.
6. Browse the database and select a **Solid White 24” Stripe (0710 11125)** for both patterns. You can use the search option instead of browsing the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



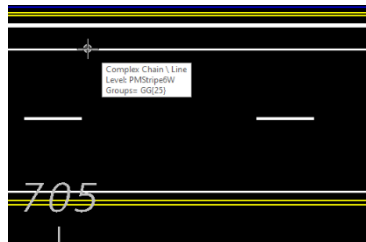
7. Set the Striping Method to **Draw Perpendicular**.
8. Set End Offset to **24.66**.



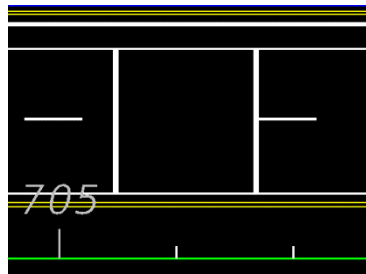
9. Make sure the Associate Alignment with Pavement Marking is toggled on and select the alignment via the select button.



10. Select **Draw Pattern**.
11. **Left Click** the first point as shown below.

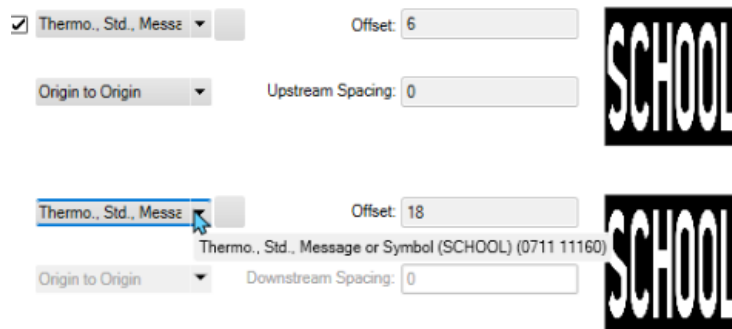


12. **Left Click** anywhere below the first point in the travel way. Your drawing should look like below.

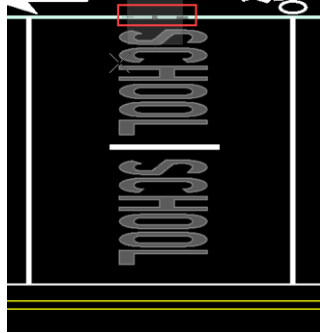


Next you will add the School message in both travel lanes.

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.

▼ Location

Element Used for Cell Placement: 9208

Placement Range:

Begin: 2006391.0, 402856.9, 0.0 But

End: 2005861.3, 403614.3, 0.0 But

Spacing and Angle:

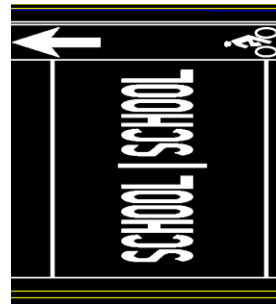
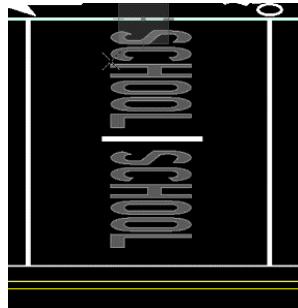
Spacing: Once 500

Angle: Relative 0

Justification:

Cell: Center Cell

Direction: Reverse:



Note You can use Place cell group to place any cell from the pay item database, not just for Pavement Marking.

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.

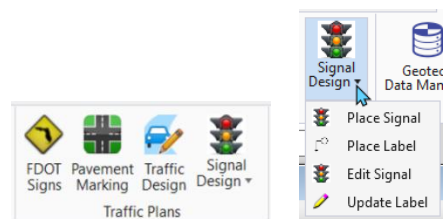
Signal Design- An application located on the FDOT Ribbon that is used to place cells used for signal design that contain the appropriate pay item data per the BOE. When launched the signals dialog opens.

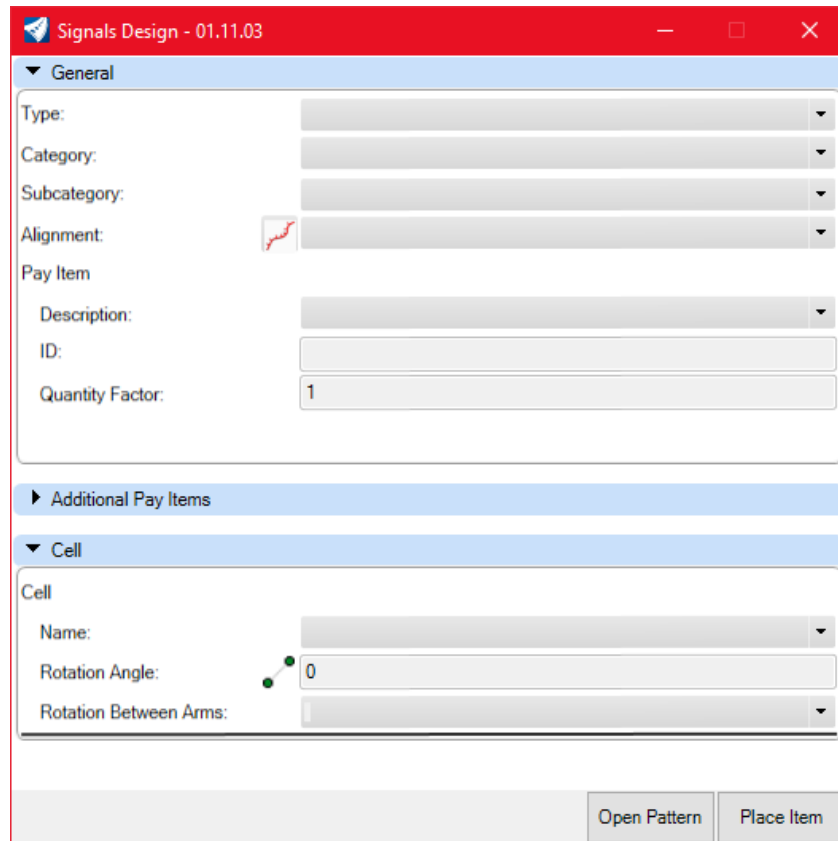
Place Signal- Executes the placement of the selected elements in the design file along an alignment.

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.



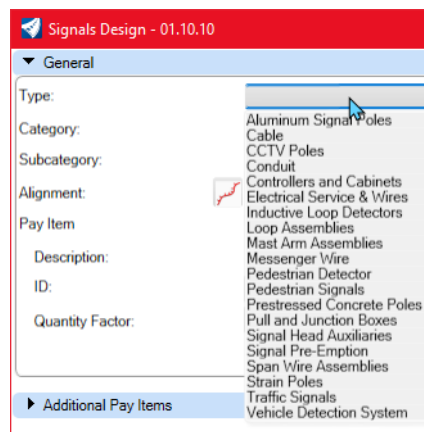


An Overview of the dialog and its applications is below.

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.

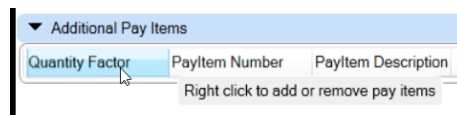
Subcategory –The Subcategory option becomes active based on your category selection. This will allow you to refine your selections.

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

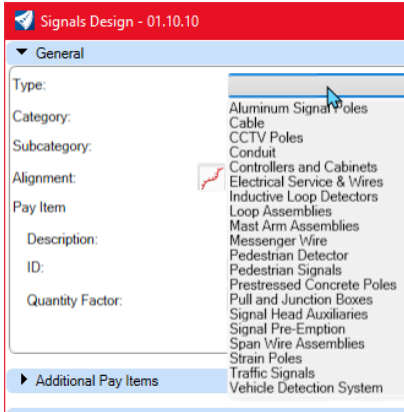
Allows the user to select a previously saved signal assembly. This is useful when you have a cell that has multiple pay items attached. Build it once and recall it for future placement.

PLACE ITEM

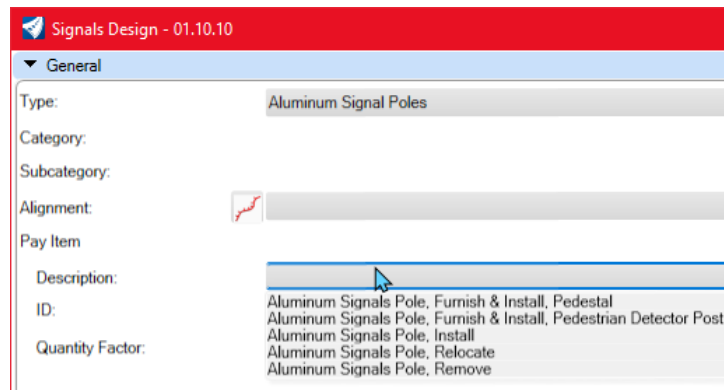
Executes the placement of the signal assembly based on the previous selections.

CATEGORY TYPE OPTIONS

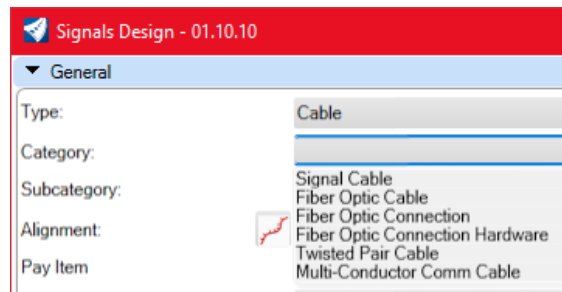
This section provides an overview of all the options in the pulldown list.



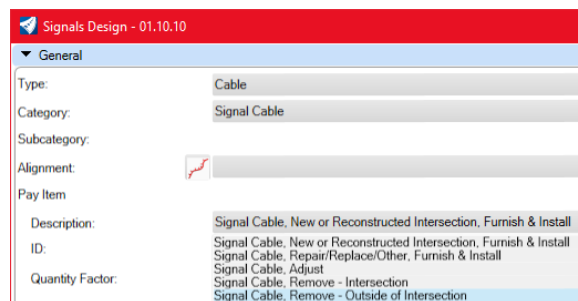
ALUMINUM SIGNAL POLES



CABLE



SIGNAL CABLE



FIBER OPTIC CABLE

Signals Design - 01.10.10

General

Type: Cable

Category: Fiber Optic Cable

Subcategory:

Alignment:

Pay Item

Description: Fiber Optic Cable, F&I, Overhead, 2-12 Fibers

ID: Fiber Optic Cable, F&I, Overhead, 2-12 Fibers
Fiber Optic Cable, F&I, Overhead, 13-48 Fibers
Fiber Optic Cable, F&I, Overhead, 49-96 Fibers
Fiber Optic Cable, F&I, Overhead, 97-144 Fibers
Fiber Optic Cable, F&I, Underground, 2-12 Fibers
Fiber Optic Cable, F&I, Underground, 13-48 Fibers
Fiber Optic Cable, F&I, Underground, 49-96 Fibers
Fiber Optic Cable, F&I, Underground, 97-144 Fibers

Quantity Factor:

Additional Pay Items: FIBER OPTIC CABLE, F&I, UNDERGROUND, 241 - 288 FIBERS
FIBER OPTIC CABLE, F&I, UNDERGROUND, 193 - 240 FIBERS
FIBER OPTIC CABLE, F&I, UNDERGROUND, 145 - 192 FIBERS
Fiber Optic Cable, Install, Overhead
Fiber Optic Cable, Install, Underground
Fiber Optic Cable, Relocate, Overhead
Fiber Optic Cable, Relocate, Underground
Fiber Optic Cable, Remove, Overhead
Fiber Optic Cable, Remove, Underground

FIBER OPTIC CONNECTION

Cable

Fiber Optic Connection

Fiber Optic Connection, Install, Splice

Fiber Optic Connection, Install, Splice

Fiber Optic Connection, Install, Termination

FIBER OPTIC CONNECTION HARDWARE

Signals Design - 01.10.10

General

Type: Cable

Category: Fiber Optic Connection Hardware

Subcategory: F&I

Alignment:

Pay Item

Description: Fiber Optic Connection Hardware, F&I, Splice Enclosure

ID: Fiber Optic Connection Hardware, F&I, Splice Enclosure
Fiber Optic Connection Hardware, F&I, Splice Tray
Fiber Optic Connection Hardware, F&I, Preterminated Connector Assembly
Fiber Optic Connection Hardware, F&I, Buffer Tube Fan Out Kit
Fiber Optic Connection Hardware, F&I, Patch Panel, Preterminated
Fiber Optic Connection Hardware, F&I, Patch Panel, Field Terminated
Fiber Optic Connection Hardware, F&I, Connector Panel

Quantity Factor:

TWISTED PAIR CABLE

Cable

Twisted Pair Cable

Signals Communication Cable, Twisted Pair Cable, Furnish & Install

Signals Communication Cable, Twisted Pair Cable, Furnish & Install

Signals Communication Cable, Twisted Pair Cable, Install

Signals Communication Cable, Twisted Pair Cable, Relocate

Signals Communication Cable, Twisted Pair Cable, Remove

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

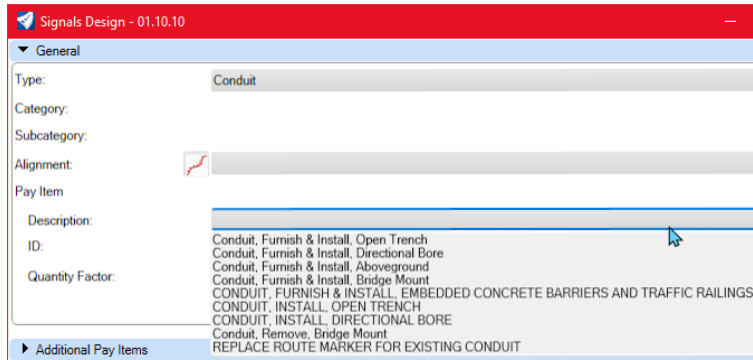
CCTV Poles
Concrete CCTV Pole
Concrete CCTV Pole, Furnish & Install, with Lowering Device (63)
Concrete CCTV Pole, Furnish & Install, with Lowering Device (63)
Concrete CCTV Pole, Furnish & Install, with Lowering Device (69)
Concrete CCTV Pole, Furnish & Install, with Lowering Device (75)
Concrete CCTV 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

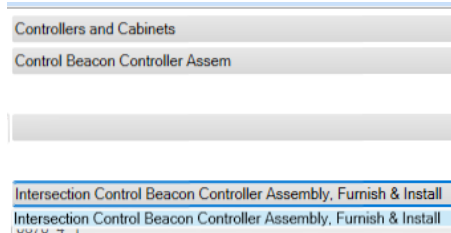
CONDUIT

This allows the designer to draw conduit using snaps. Drawing conduit along an arc is still in development at this time.

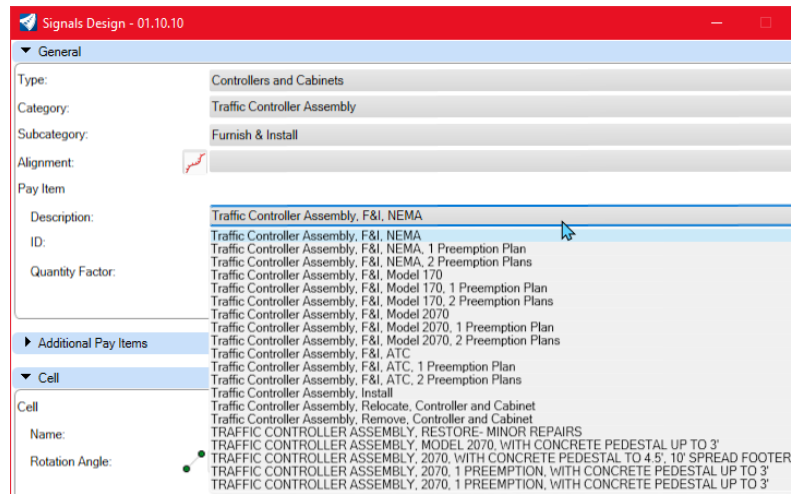


CONTROLLERS AND CABINETS

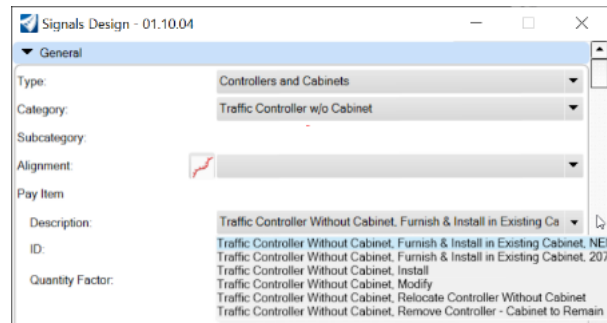
CONTROL BEACON CONTROLLER ASSEMBLY



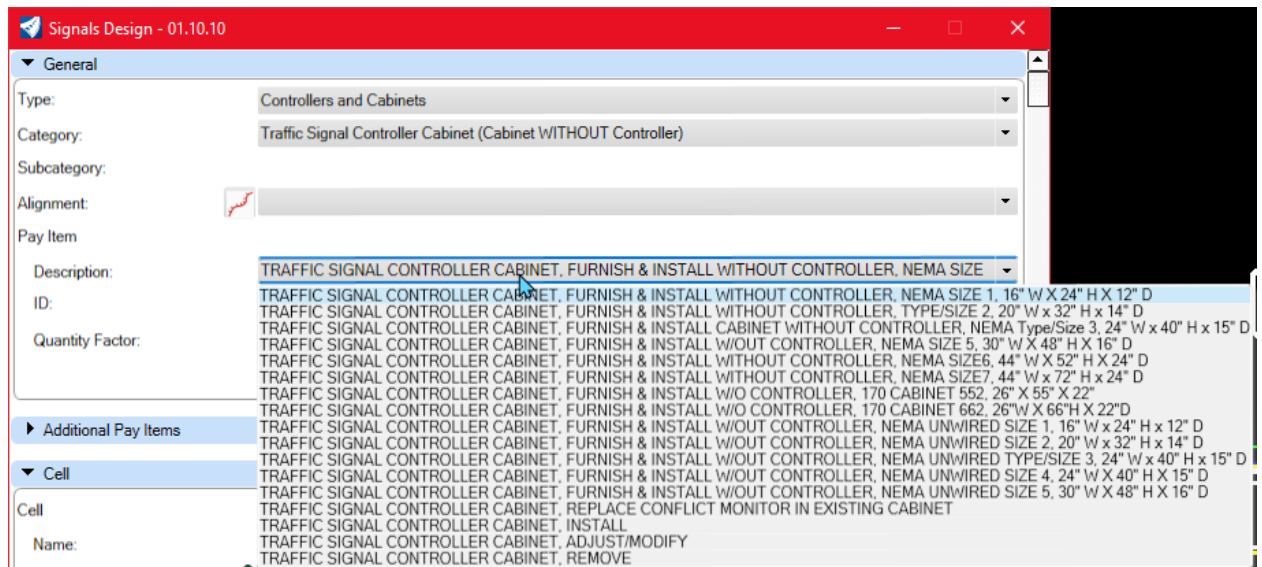
TRAFFIC CONTROLLER ASSEMBLY



TRAFFIC CONTROLLER W/O CABINET

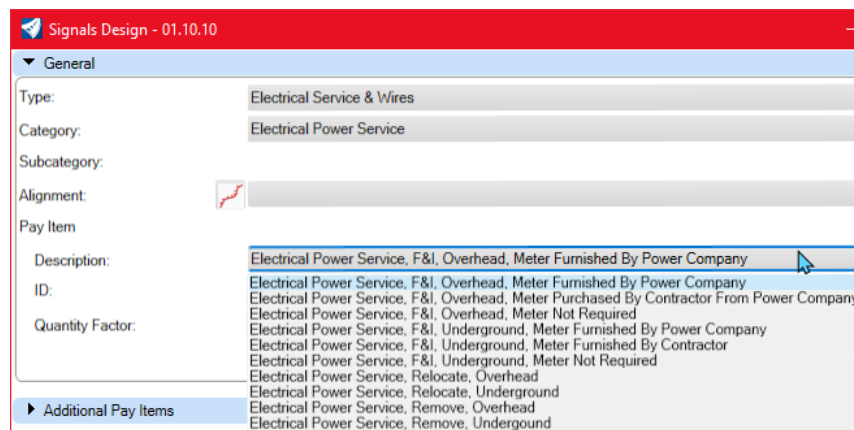


TRAFFIC SIGNAL CONTROLLER CABINET (CABINET WITHOUT CONTROLLER)



ELECTRICAL SERVICE & WIRES

ELECTRICAL POWER SERVICE



ELECTRIC SERVICE WIRE


Signals Design - 01.10.10

General

Type: Electrical Service & Wires

Category: Electric Service Wire

Subcategory:

Alignment: 

Pay Item

Description: Electrical Service Wire, Furnish & Install

ID: Electrical Service Wire, Furnish & Install
 Electrical Service Wire, Relocate
 Electrical Service Wire, Remove

Quantity Factor: ELECTRICAL SERVICE DISCONNECT, F&I, POLE MOUNT
 ELECTRICAL SERVICE DISCONNECT, F&I, CABINET
 ELECTRICAL SERVICE DISCONNECT, REMOVE- POLE OR CABINET TO REMAIN
 ELECTRICAL POWER SERVICE- TRANSFORMER FURNISH & INSTALL
 ELECTRICAL POWER SERVICE- TRANSFORMER, REPLACE EXISTING

INDUCTIVE LOOP DETECTORS


Signals Design - 01.10.10

General

Type: Inductive Loop Detectors

Category:

Subcategory:

Alignment: 

Pay Item

Description:

ID: Loop Detector Inductive, F&I, Type 1, 1 CH, R, S
 Loop Detector Inductive, F&I, Type 2, 1 CH, R, S, TD
 Loop Detector Inductive, F&I, Type 3, 1 CH, SS, S
 Loop Detector Inductive, F&I, Type 4, 1 CH, SS, S, TD
 Loop Detector Inductive, F&I, Type 5, 2 CH, SS, S
 Loop Detector Inductive, F&I, Type 6, 2 CH, SS, S, TD
 Loop Detector Inductive, F&I, Type 7, 4 CH, SS, S
 Loop Detector Inductive, F&I, Type 9, 2 CH, SS, RM

▶ Additional Pay Items
 Loop Detector Inductive, F&I, Type 10, 2 CH, SS, RM, TD
 Loop Detector Inductive, F&I, Type 11, 4 CH, SS, RM
 Loop Detector Inductive, F&I, Type 12, 4 CH, SS, RM, TD

▼ Cell
 Loop Detector Inductive, Install
 Loop Detector Inductive, Relocate

Cell
 Loop Detector Inductive, Remove, Cabinet to Remain

LOOP ASSEMBLIES

Signals Design - 01.10.10

General

Type: Loop Assemblies

Category:

Subcategory:

Alignment:

Pay Item

Description:

ID:

Quantity Factor:

Additional Pay Items

Cell

Cell

Name:

Rotation Angle:

Loop Detector Inductive, F&I, Type 1, 1 CH, R, S

Loop Detector Inductive, F&I, Type 2, 1 CH, R, S, TD

Loop Detector Inductive, F&I, Type 3, 1 CH, SS, S

Loop Detector Inductive, F&I, Type 4, 1 CH, SS, S, TD

Loop Detector Inductive, F&I, Type 5, 2 CH, SS, S

Loop Detector Inductive, F&I, Type 6, 2 CH, SS, S, TD

Loop Detector Inductive, F&I, Type 7, 4 CH, SS, S

Loop Detector Inductive, F&I, Type 9, 2 CH, SS, RM

Loop Detector Inductive, F&I, Type 10, 2 CH, SS, RM, TD

Loop Detector Inductive, F&I, Type 11, 4 CH, SS, RM

Loop Detector Inductive, F&I, Type 12, 4 CH, SS, RM, TD

Loop Detector Inductive, Install

Loop Detector Inductive, Relocate

Loop Detector Inductive, Remove, Cabinet to Remain

Loop Assembly, F&I, Type A (20')

Loop Assembly, F&I, Type A (50')

Loop Assembly, F&I, Type B

Loop Assembly, F&I, Type C

Loop Assembly, F&I, Type D

Loop Assembly, F&I, Type E

Loop Assembly, F&I, Type F (20')

Loop Assembly, F&I, Type F (25')

Loop Assembly, F&I, Type F (30')

Loop Assembly, F&I, Type F (35')

Loop Assembly, F&I, Type F (40')

Loop Assembly, F&I, Type F (50')

Loop Assembly, F&I, Type G

Loop Assembly, F&I, Type H

Cell

Cell

Name:

Rotation Angle:

LoopA20

LoopA50

LoopB06

LoopC20

LoopD20

LoopE

LoopF20

LoopF25

LoopF30

LoopF35

LoopF40

LoopF50

MAST ARM ASSEMBLIES

FURNISH & INSTALL

Signals Design - 01.10.10

General

Type: Mast Arm Assemblies

Category: Furnish & Install

Subcategory:

Alignment:

Pay Item

Description:

ID:

Quantity Factor:

Additional Pay Items

Cell

Cell

Name:

Rotation Angle:

Rotation Between Arms:

Mast Arm Assembly, Furnish & Install, Single Arm 30'

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'-30'

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'-30'

Mast Arm Assembly, Furnish & Install, Double Arm 50'-40'

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'-60'

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

Signals Design - 01.10.10

General

Type: Mast Arm Assemblies

Category: Furnish & Install Ex Foundation

Subcategory:

Alignment:

Pay Item

Description: Mast Arm Assembly, Furnish & Install on Existing Foundation, Single Arm 30'

ID: Mast Arm Assembly, Furnish & Install on Existing Foundation, Single Arm 30'

Quantity Factor: 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'-30'

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'-60'

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

Quantity Factor: 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
 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

Quantity Factor:

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
 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

Quantity Factor:

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

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:

Quantity Factor:

Additional Pay Items

Cell

Cell

Name:

Rotation Angle:

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

ID:

Quantity Factor:

Additional Pay Items

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

Signals Design - 01.10.10

General

Type: Pull and Junction Boxes

Category: Pull and Splice Boxes

Subcategory:

Alignment:

Pay Item

Description:

ID:

Quantity Factor:

Additional Pay Items

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

JUNCTION BOXES

Signals Design - 01.10.10

General

Type: Pull and Junction Boxes

Category: Junction Boxes

Subcategory:

Alignment:

Pay Item

Description:

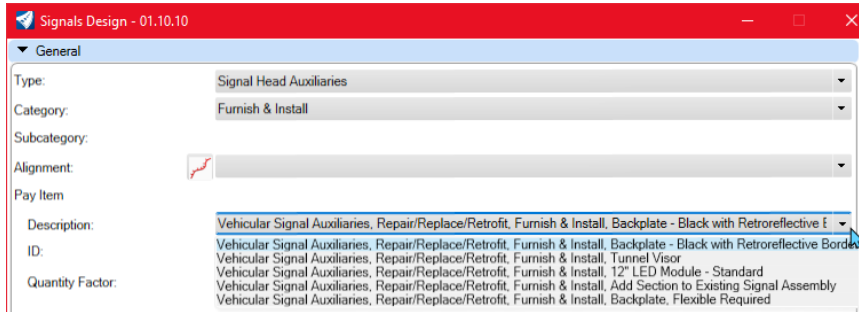
ID:

Quantity Factor:

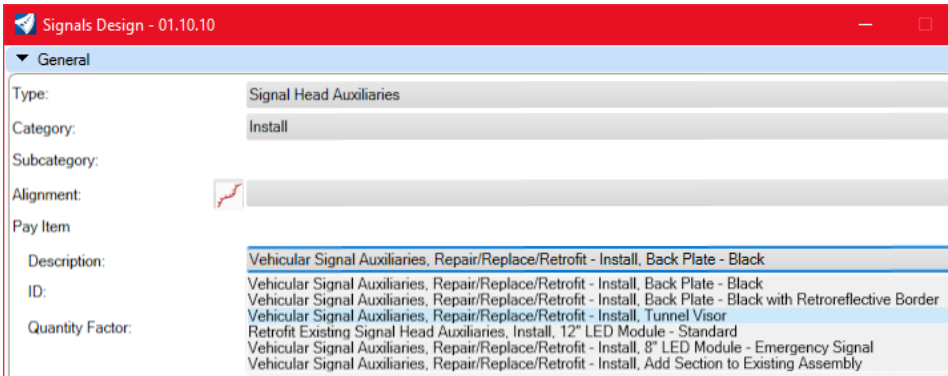
Junction Box, Furnish & Install, Aerial
 Junction Box, Furnish & Install, Aerial
 Junction Box, Furnish & Install, Mounted
 JUNCTION BOX, FURNISH & INSTALL, EMBEDDED
 Junction Box, Relocate

SIGNAL HEAD AUXILIARIES

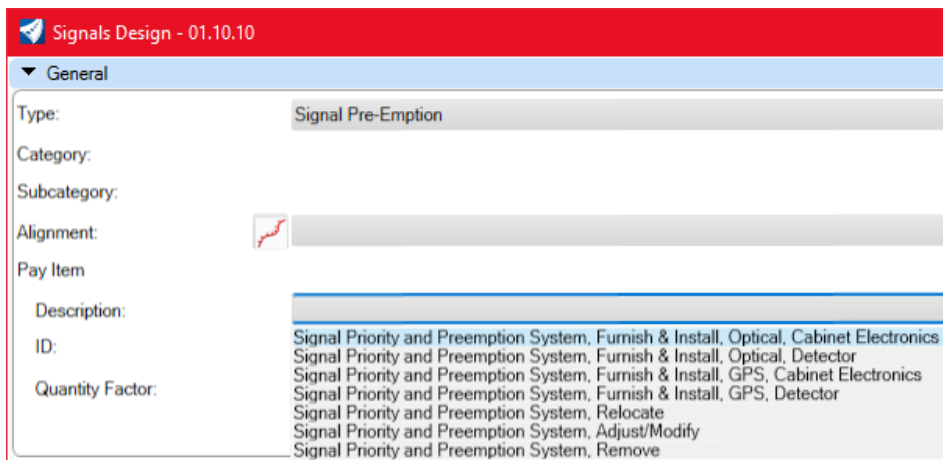
FURNISH & INSTALL



INSTALL



SIGNAL PRE-EMPTION



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

Quantity Factor:

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

Quantity Factor:

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
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

▶ Additional Pay Items

▼ Cell

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

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
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, 1 Way
Traffic Signal, Furnish & Install, Aluminum, 3 Section, 2 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

Additional Pay Items

Cell

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
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, 2 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

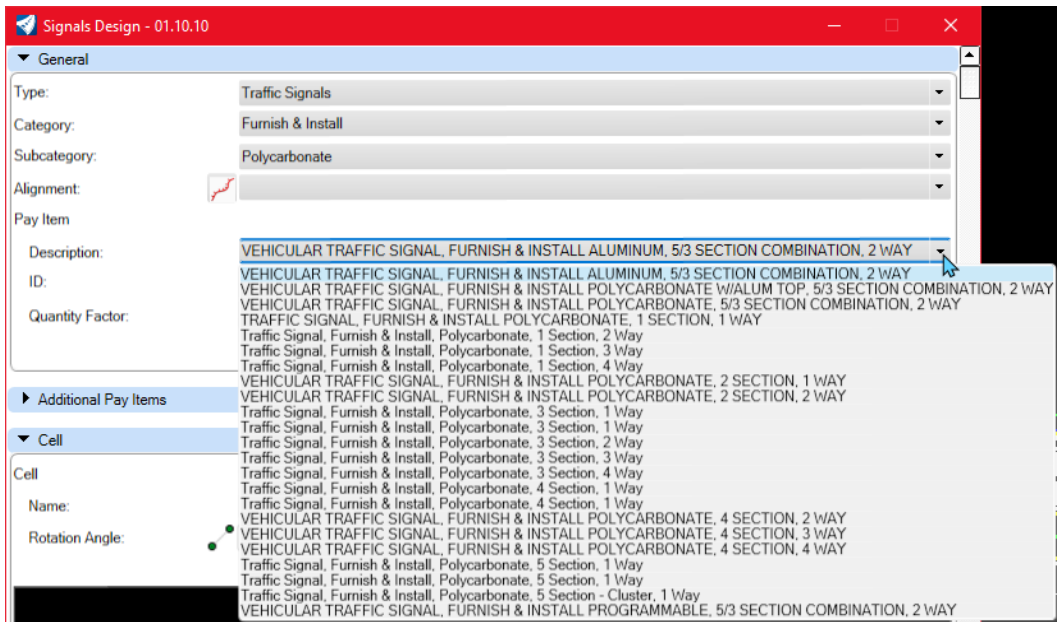
Cell

Cell

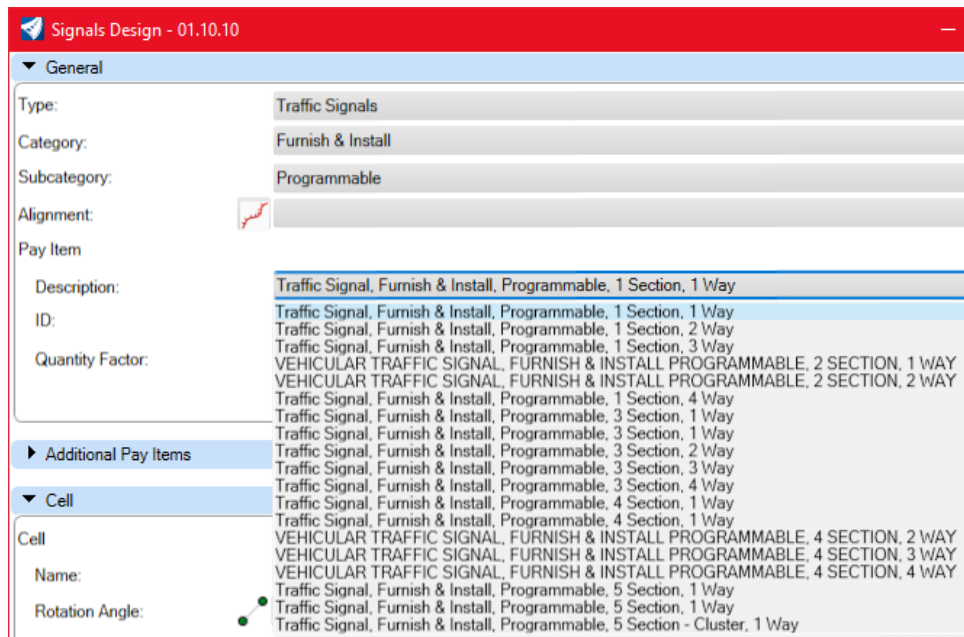
Name:

Rotation Angle:

FURNISH & INSTALL – POLYCARBONATE




FURNISH & INSTALL – PROGRAMMABLE



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

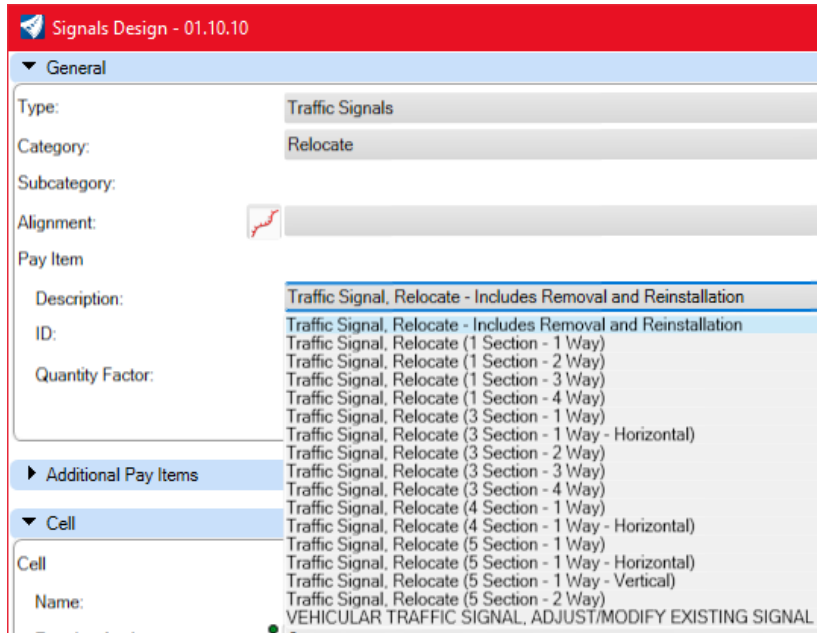
Description: Traffic Signal, Remove - Poles to Remain
ID: Traffic Signal, Remove - Poles to Remain
Quantity Factor: Traffic Signal, Remove (1 Section - 1 Way)
Traffic Signal, Remove (1 Section - 2 Way)
Traffic Signal, Remove (1 Section - 3 Way)
Traffic Signal, Remove (1 Section - 4 Way)
Traffic Signal,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

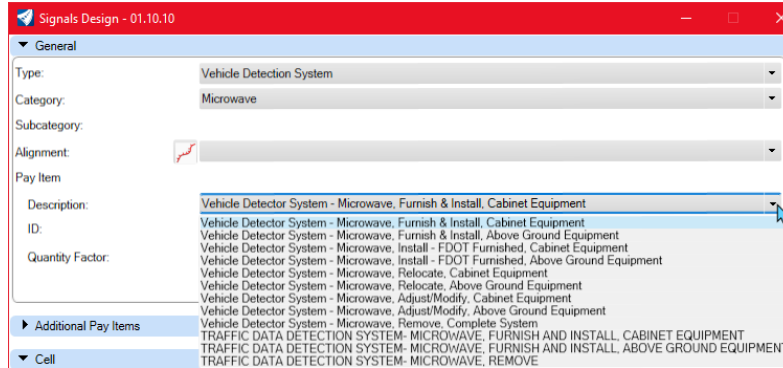
Cell
Name:

RELOCATE



VEHICLE DETECTION SYSTEM

MICROWAVE



VIDEO


Signals Design - 01.10.10

General

Type: Vehicle Detection System

Category: Video

Subcategory:

Alignment: 

Pay Item

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

ID: Vehicle Detector System - Video, Furnish & Install, Cabinet Equipment
 Vehicle Detector System - Video, Furnish & Install, Above Ground Equipment
 Vehicle Detector System - Video, Install - FDOT Furnished, Cabinet Equipment
 Vehicle Detector System - Video, Install - FDOT Furnished, Above Ground Equipment
 Vehicle Detector System - Video, Relocate, Cabinet Equipment
 Vehicle Detector System - Video, Relocate, Above Ground Equipment
 Vehicle Detector System - Video, Adjust/Modify, Cabinet Equipment
 Vehicle Detector System - Video, Adjust/Modify, Above Ground Equipment

▶ Additional Pay Items
 Vehicle Detector System - Video, Remove, Complete System
 Vehicle Detector System - Video, Diagnosis and Misc Repair, Complete System

WIRELESS MAGNETOMETER


Signals Design - 01.10.10

General

Type: Vehicle Detection System

Category: Wireless Magnetometer

Subcategory:

Alignment: 

Pay Item

Description: Vehicle Detector System - Wireless Magnetometer, Furnish & Install, Cabinet Equipment

ID: Vehicle Detector System - Wireless Magnetometer, Furnish & Install, Cabinet Equipment
 Vehicle Detector System - Wireless Magnetometer, Furnish & Install, Above Ground Equipment
 Vehicle Detector System - Wireless Magnetometer, Furnish & Install, In-Road Electronics
 Vehicle Detector System - Wireless Magnetometer, Relocate, Cabinet Equipment
 Vehicle Detector System - Wireless Magnetometer, Relocate, Above Ground Equipment
 Vehicle Detector System - Wireless Magnetometer, Adjust/Modify, Cabinet Equipment
 Vehicle Detector System, Wireless Magnetometer, Remove Above Ground Equipment
 Vehicle Detection System, Wireless Magnetometer, Remove In-Road Unit

TRAFFIC DATA DETECTION SYSTEM


Signals Design - 01.10.10

General

Type: Vehicle Detection System

Category: Traffic Data Detection System

Subcategory:

Alignment: 

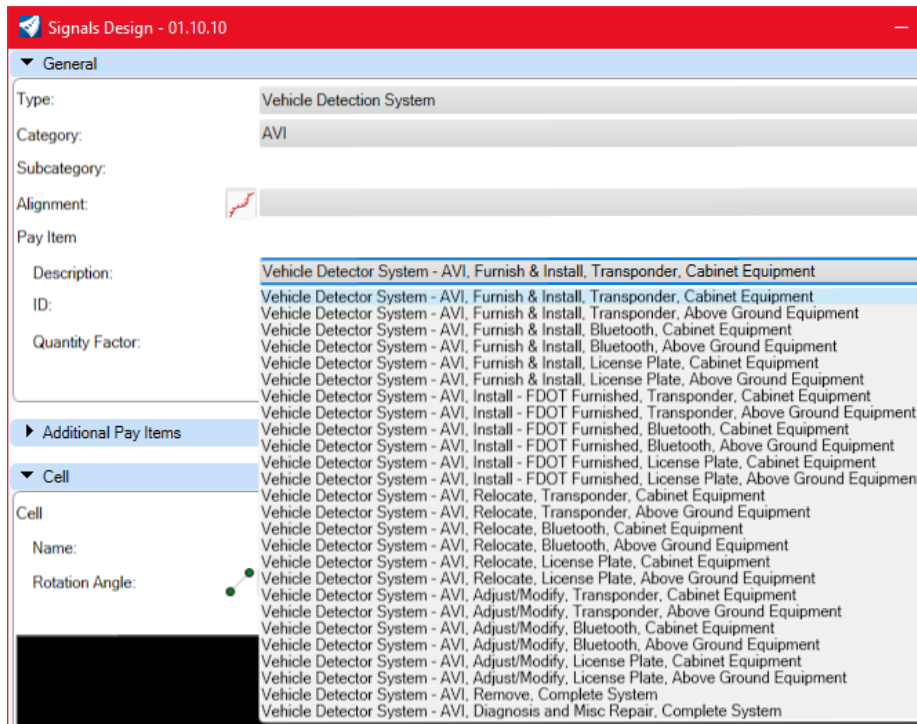
Pay Item

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

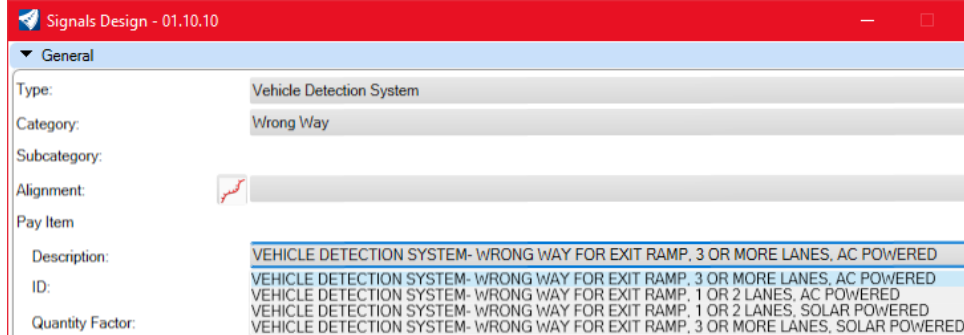
ID: TRAFFIC DATA DETECTION SYSTEM- VIDEO, FURNISH AND INSTALL, CABINET EQUIPMENT
 TRAFFIC DATA DETECTION SYSTEM- VIDEO, FURNISH AND INSTALL, ABOVE GROUND EQUIPMENT
 TRAFFIC DATA DETECTION SYSTEM- VIDEO, INSTALL, CABINET EQUIPMENT
 TRAFFIC DATA DETECTION SYSTEM- VIDEO, INSTALL, ABOVE GROUND EQUIPMENT

Quantity Factor: TRAFFIC DATA DETECTION SYSTEM- VIDEO, REMOVE

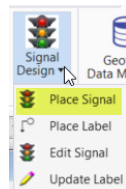
AVI



WRONG WAY



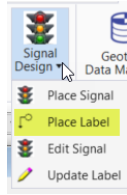
SIGNAL DESIGN PULL DOWN MENU



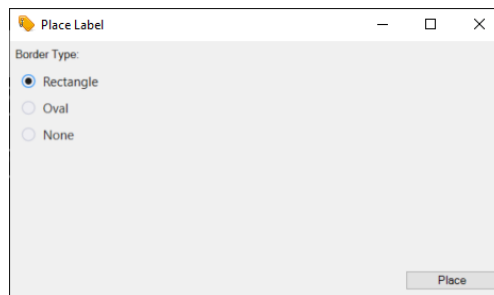
PLACE SIGNAL

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

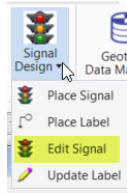
PLACE LABEL



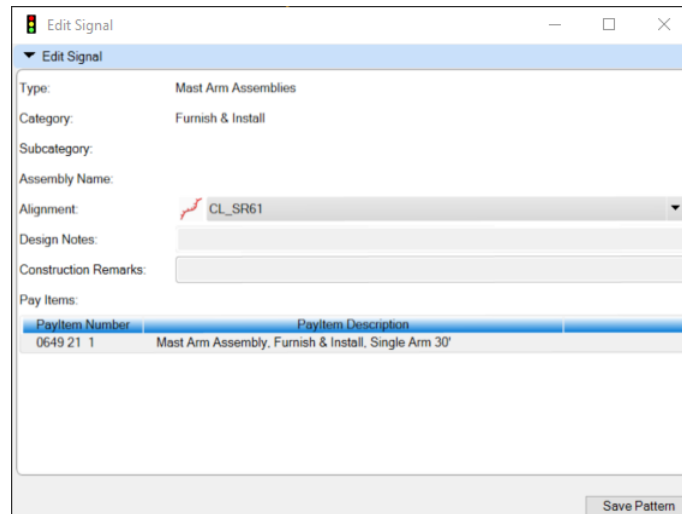
This launches the Place Label dialog. There must be a signal element placed in the file using the signal design process before using the place label command. Once the place label dialog is opened the options are whether there are shapes placed with the label or not. The label will place the pay item 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.



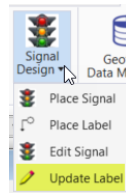
EDIT SIGNAL



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

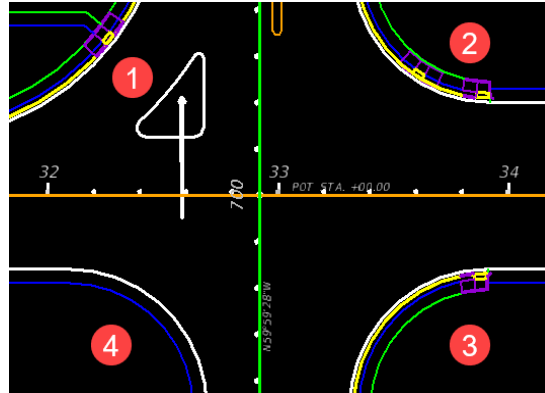



This launches the Update Label dialog. The Delete unused labels option for this dialog is to delete unused labels such as when you remove individual pay item elements and need to remove the label. The update content label option is for when you edit the signal element and need to update the label. The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

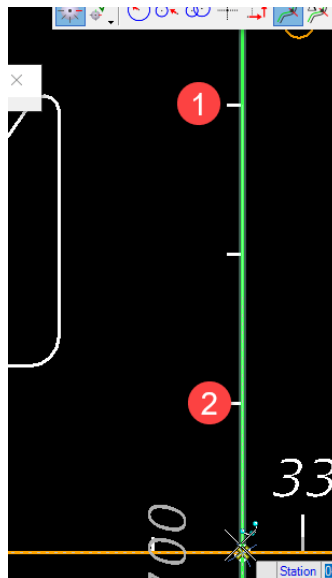


Exercise 5.1 Placing a Mast Arm Assembly

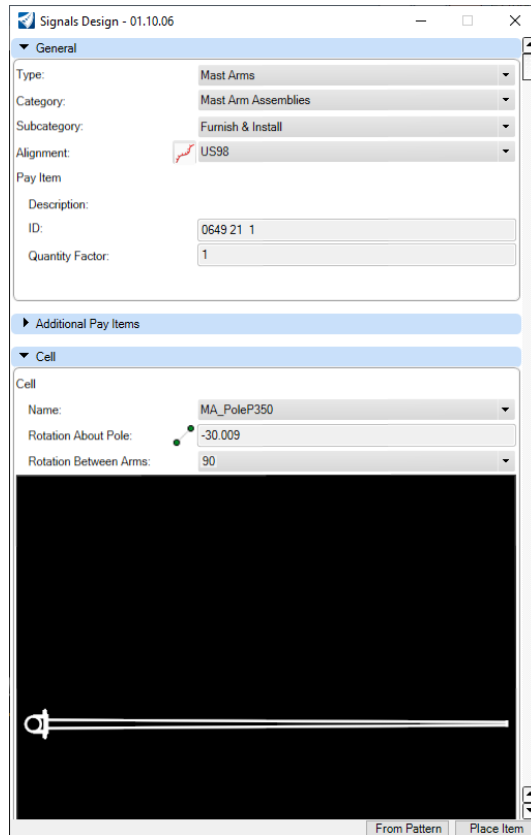
In this exercise the designer will place 4 Mast arm assemblies using the Signal Tool at 4 points in the intersection as shown below.



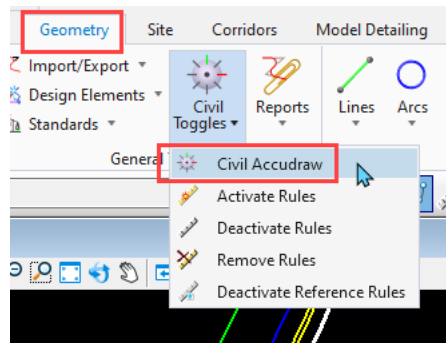
1. Open the DSGNSG01.dgn file in the Signal folder.
2. Click on the **Top half** of the signal icon.
3. For Type select **Mast Arms**.
4. For Category select **Mast Arm Assemblies**.
5. Using the alignment pulldown select **US98** as the alignment.
6. For Cell name select **MA_PoleP350**.
7. Pick the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



8. Your parameters should match below.



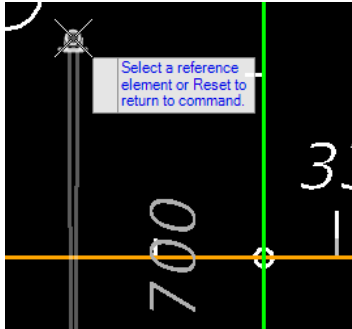
- On the Geometry tab select **Civil Toggles** and select **Accudraw**.



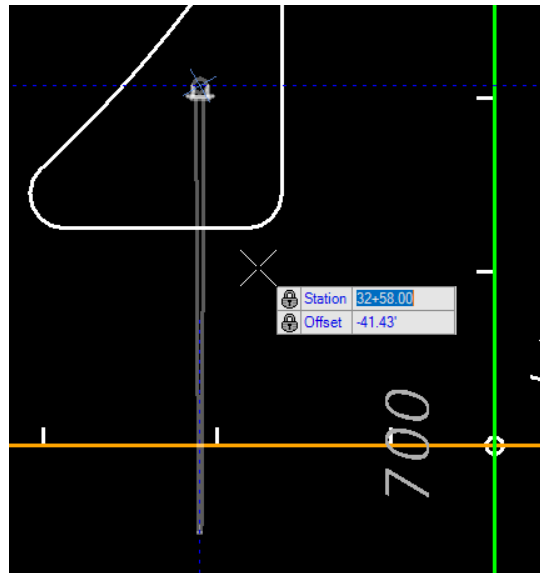
- Select the **Station-Offset** on the accudraw toolbar.



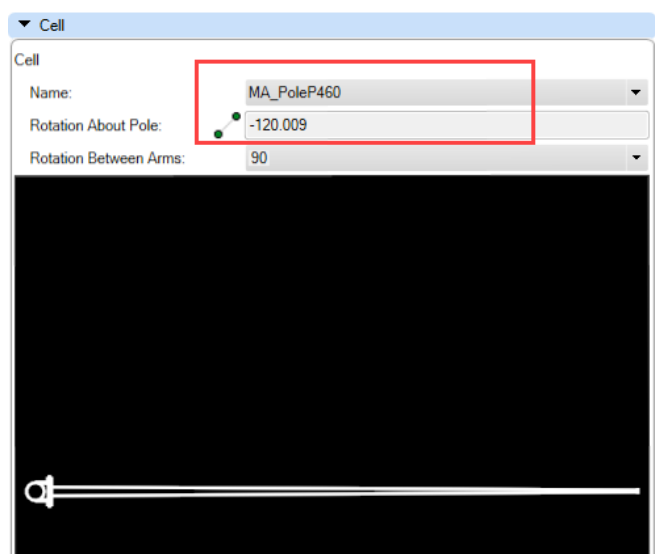
- On the Signal tool select **Place Item**.
- Type the letter **O** and select the **US98** alignment.



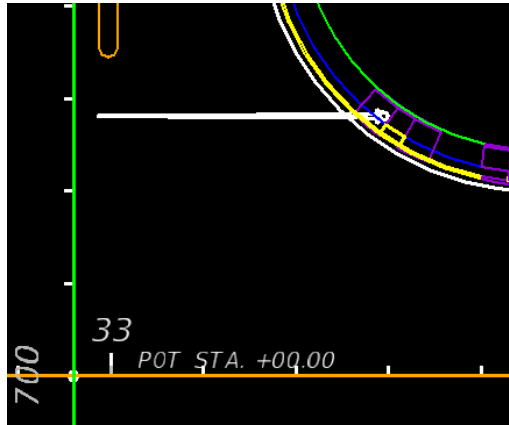
13. For Station type in **32+58**, press tab and type in **-41.43** for the offset. Notice the lock symbol appears when you select tab.



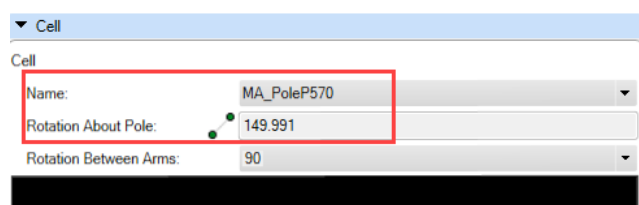
14. Notice the Mast arm locks into the selected position. **Left Click** to place the mast arm.
15. Set the following parameters to place the second mast arm.



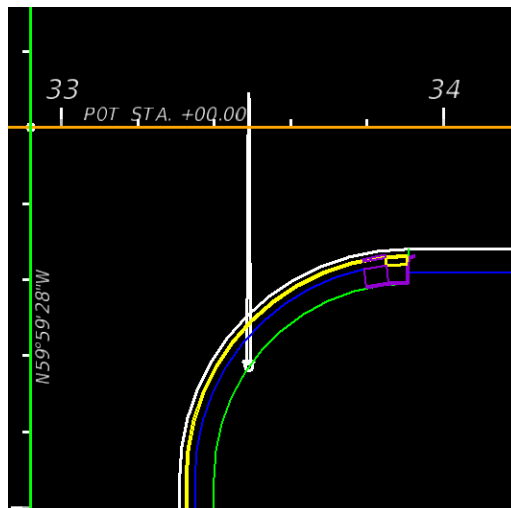
16. Select Place Item.
17. Type the letter **O** and then select the **US98** alignment.
18. In accudraw type in **33+59** for the station and **-56.28** for the offset.
19. **Left Click** to place the Mast Arm at the desired location.



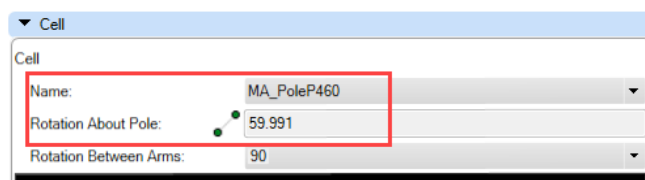
20. For **Mast Arm No. 3** match the following parameters.



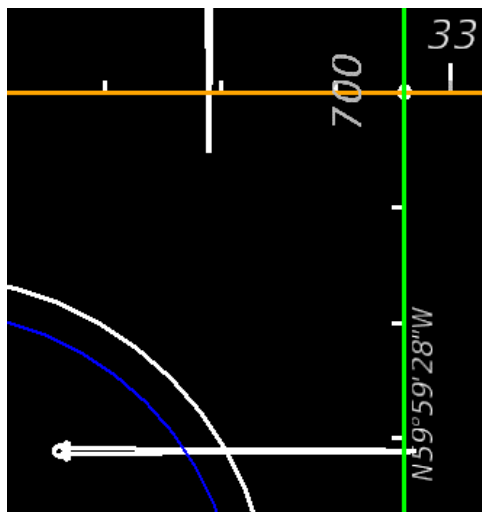
21. Select **Place Item**.
22. Type the letter **O** and then select the **US98** alignment.
23. In accudraw type in **33+49** for the station and **63.02** for the offset.
24. **Left Click** to place the Mast Arm at the desired location.



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

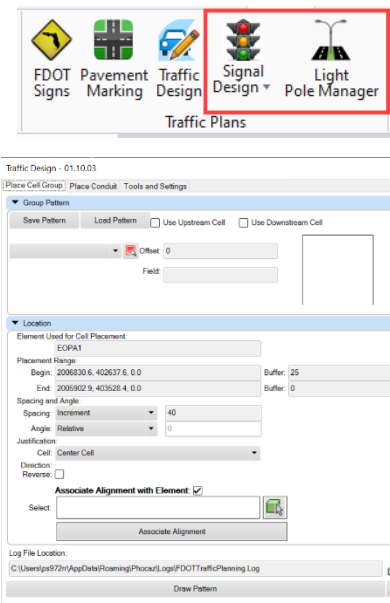
OBJECTIVE

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 a 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 the 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.

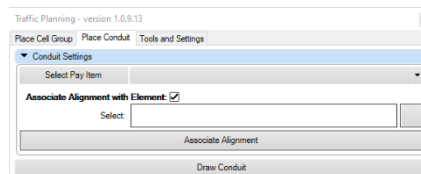
Spacing and Angle – The designer can control whether the cells can be placed once or incrementally along the source element. The angle control allows options of Relative, Absolute, and Perpendicular. If you change the spacing to increment the data box becomes active allowing the designer to enter a spacing 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 of 5 different types of 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 use to replace the current value.

EXERCISES

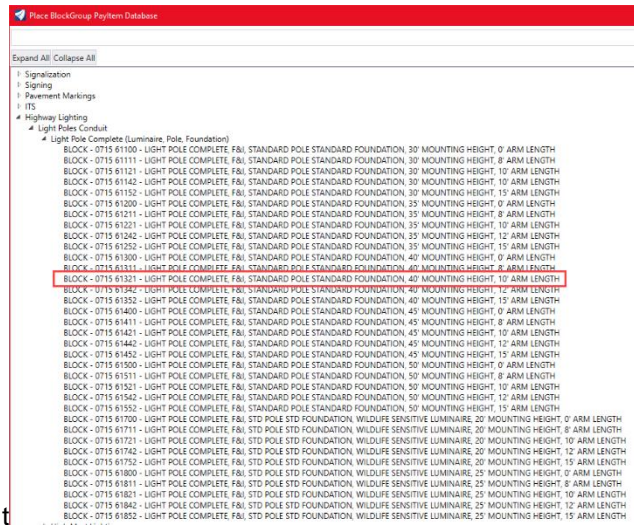
Exercise 6.1 Placing Light Poles

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

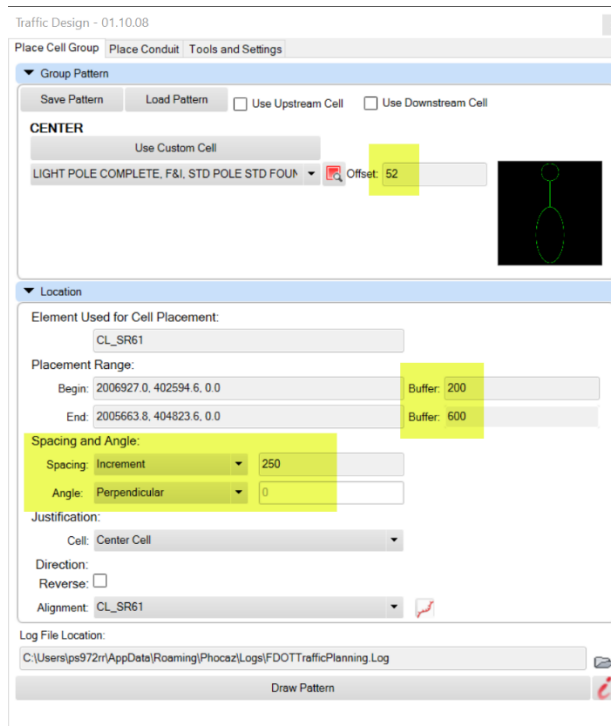
1. Open the *DSGNLT01.dgn* file located in the Lighting folder within the Project.

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

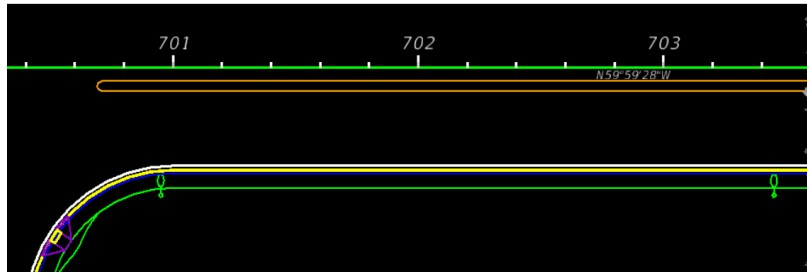
3. Select the **Red** Browse button and browse to pay item **0715 61321 Light Pole Complete, F&I, Standard Pole Standard Foundation, 40' Mounting Height, 10' Arm Length**.



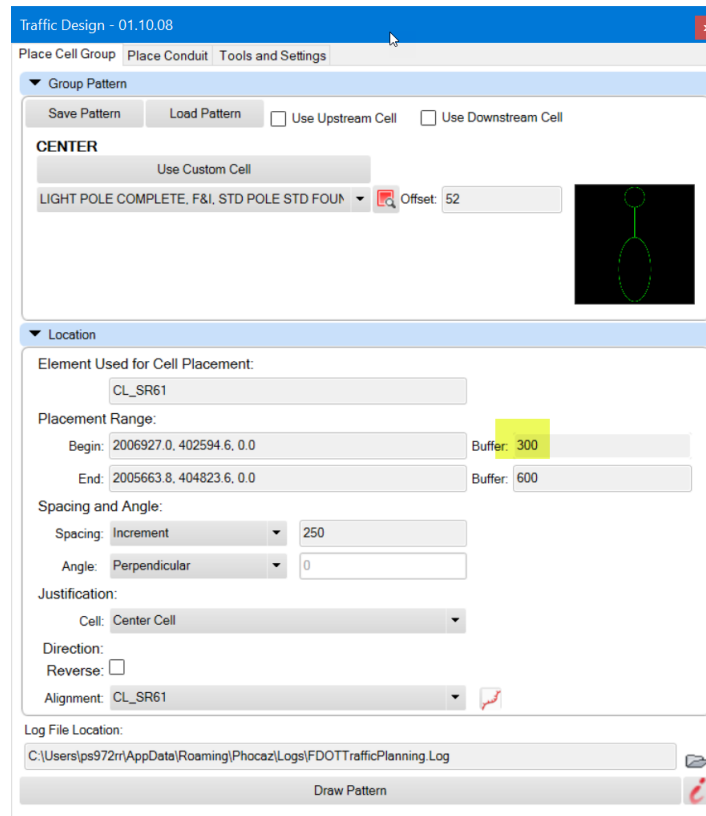
4. Set Offset to **52**.
5. Set the Begin Buffer to **200** and the End Buffer to **600**.
6. Set Spacing to **Increment**.
7. Set Angle to **Perpendicular**.
8. Make sure the Alignment is set to **CL_SR61**.
9. Match Image below.



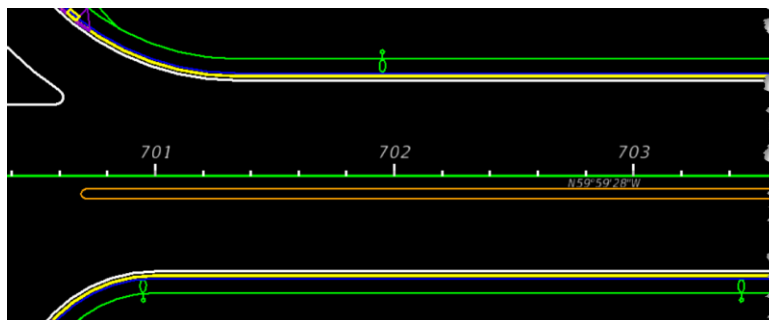
10. Select **Draw Pattern** and select the **Alignment**, notice the preview of the proposed Light Poles. You can adjust the criteria and the preview will update. Left Click on the bottom side of the Alignment to accept the preview.
11. Your drawing should look like below.



12. 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.



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



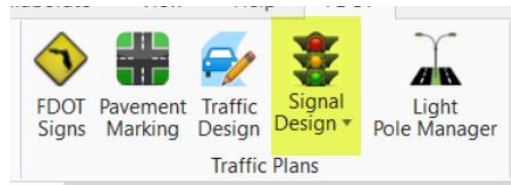
Place Cell Group places cells as ungrouped elements, meaning you can move individual Light Poles to avoid conflicts around sidewalks and driveways. If you look at the properties of one of the Light Poles, you will see a lot of data the user will need to fill in to generate a Pole Data Table. The user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

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

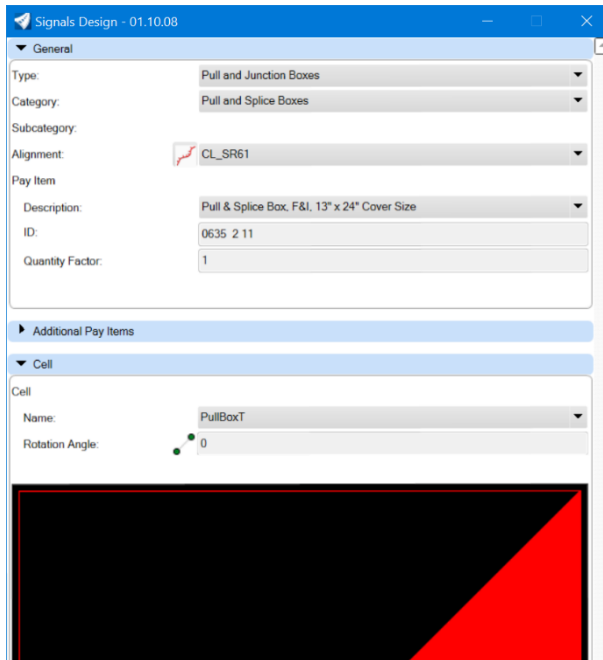
Exercise 6.2 Placing Pull and Splice Boxes

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.

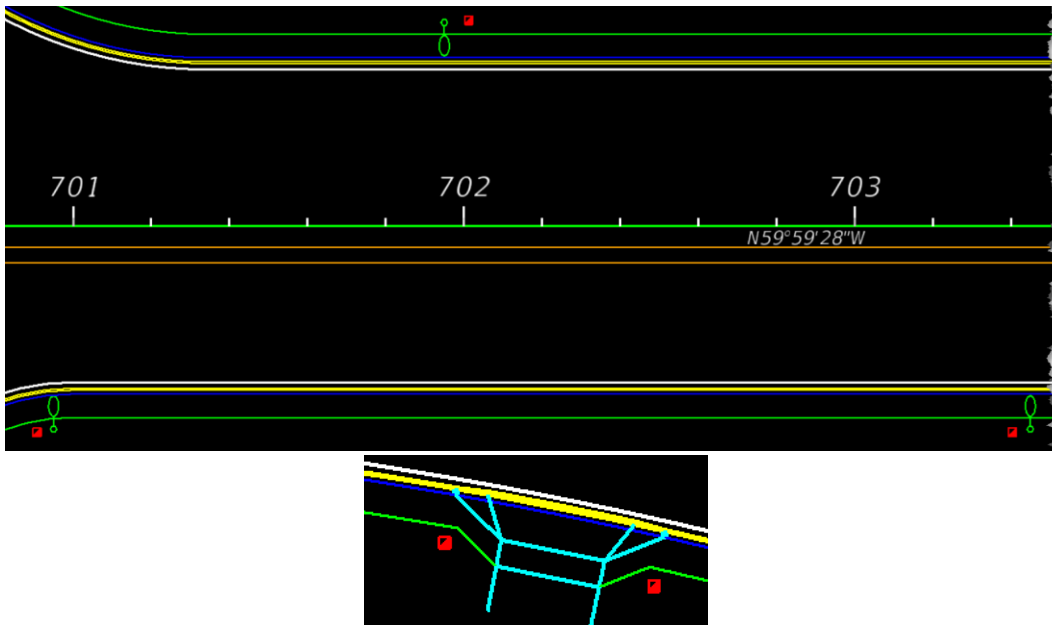


3. For Type select **Pull and Junction Boxes**. Select Same for Category.
4. For Alignment select **CL_SR61**.
5. For description select **Pull & Splice Box, F&I, 13"x24" Cover Size**. Pay Item ID will populate with **0635 2 11**. The cell will auto populate with **PullBoxT** with a preview.



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.

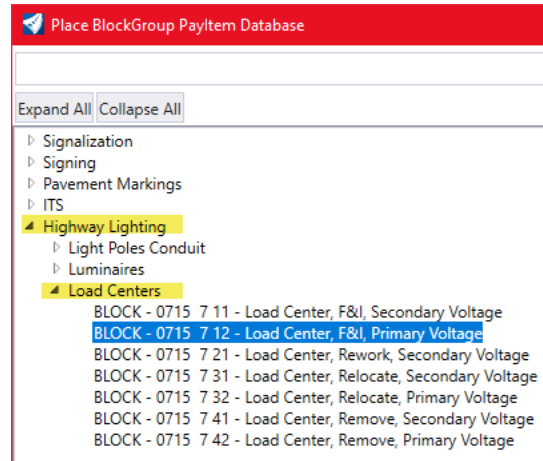


Exercise 6.3 Placing a Load Center

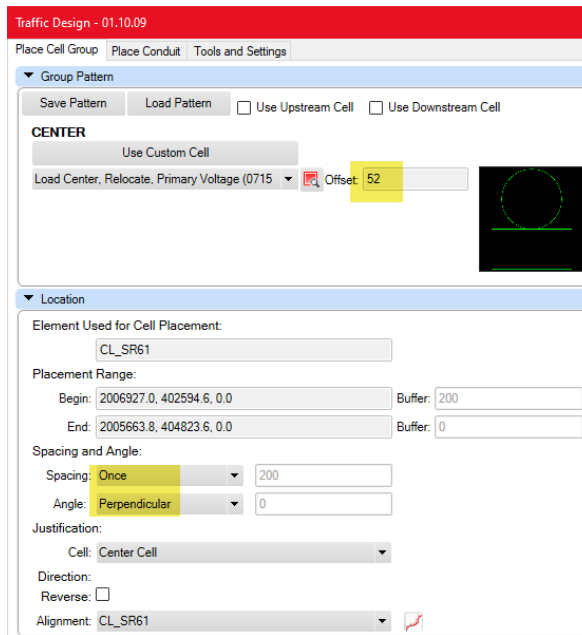
In this exercise the designer will use Place Cell Group to place a Load Center.

1. Continuing in the *DSGNLT01.dgn* file.
2. Open the **Traffic Planning** tool and stay on the **Place Cell Group**.

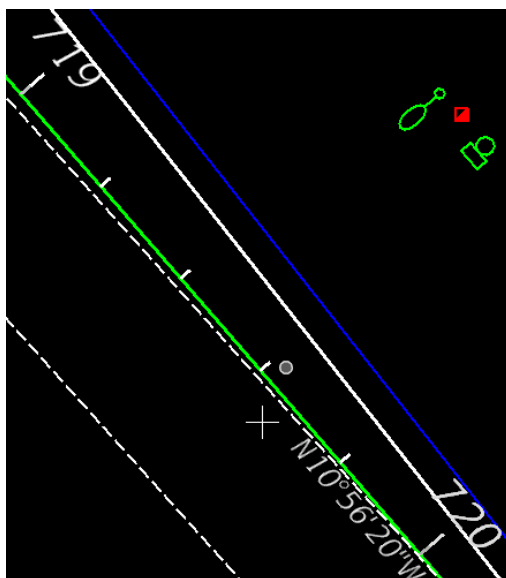
3. Select the Red Search button to open the Pay Item database, Expand **Highway Lighting** and **Load Centers**. Select Pay Item **0715 7 12 Load Center, F&I, Primary Voltage**. Click **OK**.



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.

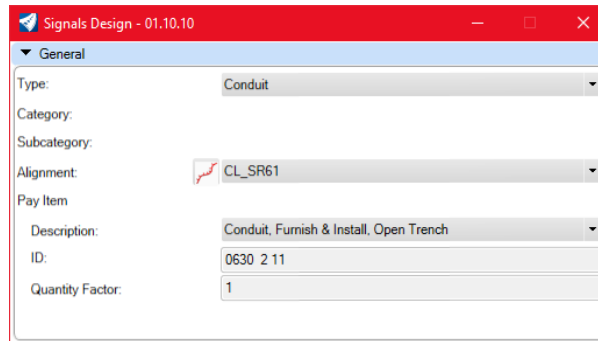
PCGIT	
PayItemNumber	0715 7 32
PayItemDescription	Load Center, Relocate, Primary Voltage
Alignment	CL_SR61
UnitOfMeasure	EA

PCGITLoadCenter	
Number	

Exercise 6.4 Drawing Conduit

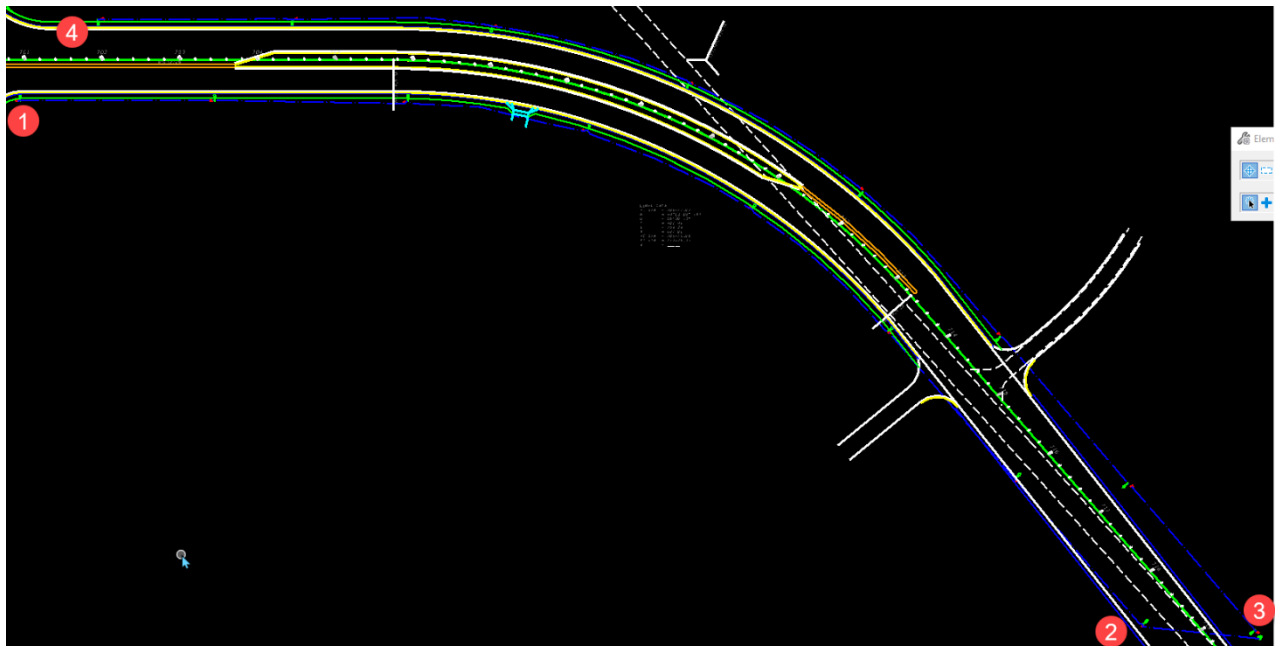
In this exercise the designer will draw conduit between light poles. The tool draws different types of conduits complete with the correct symbology including pay item numbers.

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.

Pole Manager (v2022.11.7.2)

Light Poles Load Center

Light Pole Data

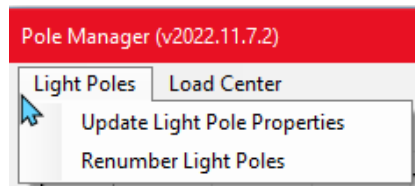
Pole No.	Easting	Northing	Baseline	Station	Offset	Foundator	Am Length	Am Rise	Mount Height	Qty Luminaires	Luminaire Type	Make/Mor	Lumens	IES Distribution Type	CCT(K)	Tilt (deg)	Luminaire Watts	Luminaire Volts	Load Center No.	Circuit No.	Maintain Agency	Pay Item
200677...	402739...	402739...	CL_SR61	700+95...	52 RT																	0715 61...
200656...	402864...	402864...	CL_SR61	703+45...	52 RT																	0715 61...
200634...	402989...	402989...	CL_SR61	705+95...	52 RT																	0715 61...
200616...	403138...	403138...	CL_SR61	708+45...	52 RT																	0715 61...
200603...	403331...	403331...	CL_SR61	710+95...	52 RT																	0715 61...
200596...	403555...	403555...	CL_SR61	713+45...	52 RT																	0715 61...
200591...	403801...	403801...	CL_SR61	715+95...	52 RT																	0715 61...
200586...	404046...	404046...	CL_SR61	718+45...	52 RT																	0715 61...
200664...	402699...	402699...	CL_SR61	701+95...	52 LT																	0715 61...
200642...	402824...	402824...	CL_SR61	704+45...	52 LT																	0715 61...
200620...	402960...	402960...	CL_SR61	706+95...	52 LT																	0715 61...
200602...	403150...	403150...	CL_SR61	709+45...	52 LT																	0715 61...
200590...	403383...	403383...	CL_SR61	711+95...	52 LT																	0715 61...
200584...	403634...	403634...	CL_SR61	714+45...	52 LT																	0715 61...
200579...	403879...	403879...	CL_SR61	716+95...	52 LT																	0715 61...
200574...	404125...	404125...	CL_SR61	719+45...	52 LT																	0715 61...

Load Center Data

Load Center No.	Easting	Northing	Baseline	Station	Offset	Pay Item
2005743.645313...	404136.2843301...	404136.2843301...	CL_SR61	719+56.38	52 LT	0715 7 32

Process/Save Light Poles Create Light Pole Report
Process/Save Load Center Create Load Center Report

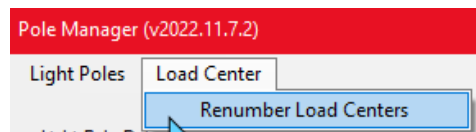
An overview of the options is discussed below.



LIGHT POLES

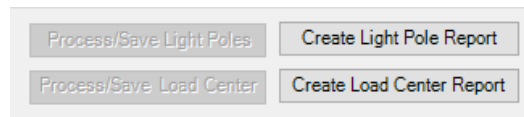
Update Light Poles – This function allows the designer to add data to each cell individually or all.

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.



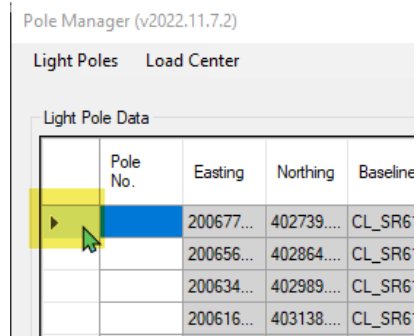
PROCESS/SAVE LIGHT POLES – PROCESS/SAVE LOAD CENTERS

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.



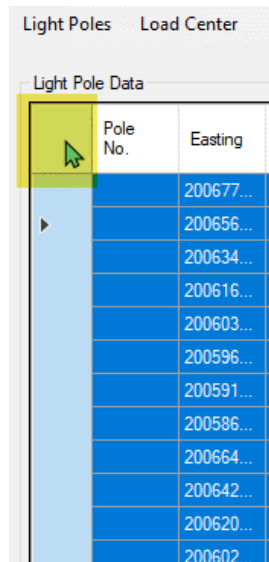
Pole Manager (v2022.11.7.2)

Light Poles Load Center

Light Pole Data

	Pole No.	Easting	Northing	Baseline
▶	200677...	402739...	CL_SR6	
	200656...	402864...	CL_SR6	
	200634...	402989...	CL_SR6	
	200616...	403138...	CL_SR6	

You can select all rows by clicking as shown below.

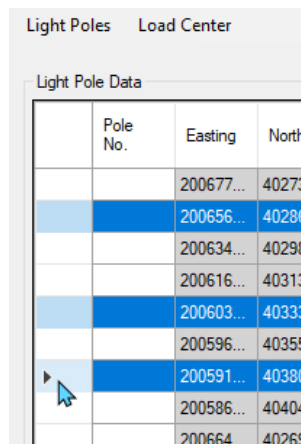


Light Poles Load Center

Light Pole Data

	Pole No.	Easting
▶	200677...	402739...
▶	200656...	402864...
▶	200634...	402989...
▶	200616...	403138...
▶	200603...	403333...
▶	200596...	403555...
▶	200591...	403800...
▶	200586...	404044...
▶	200664...	402666...
▶	200642...	402888...
▶	200620...	403111...
▶	200602...	403333...

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



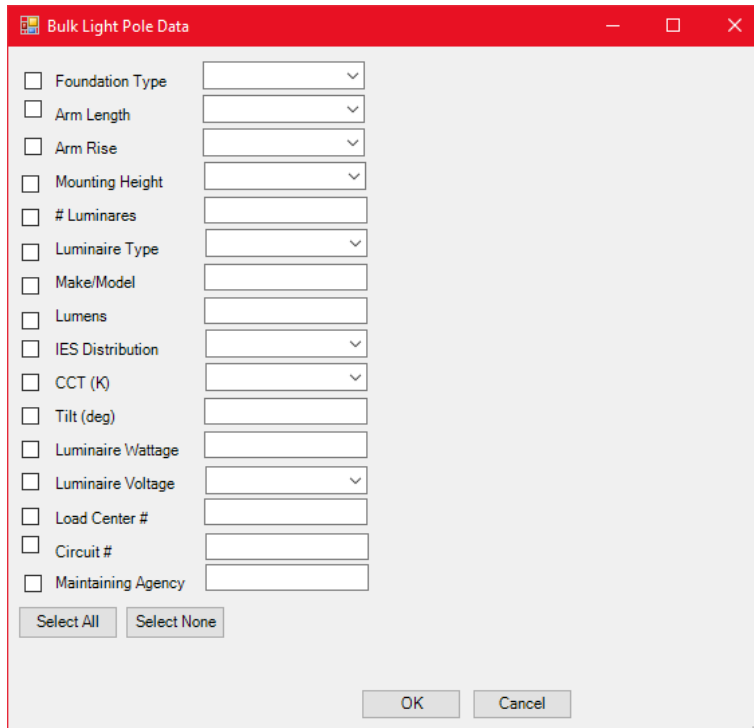
Light Poles Load Center

Light Pole Data

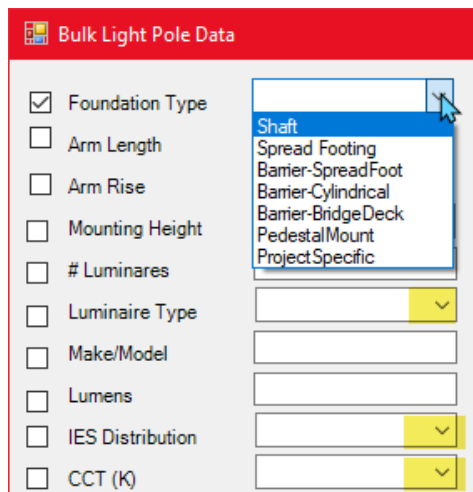
	Pole No.	Easting	North
	200677...	402739...	CL_SR6
▶	200656...	402864...	CL_SR6
	200634...	402989...	CL_SR6
	200616...	403138...	CL_SR6
▶	200603...	403333...	CL_SR6
	200596...	403555...	CL_SR6
▶	200591...	403800...	CL_SR6
	200586...	404044...	CL_SR6
	200664...	402666...	CL_SR6

Note The dark highlighted rows with data is 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.



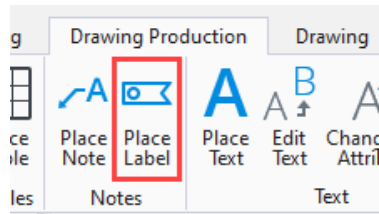
Notice that some of the fields have a down arrow, this means that there are preset choices that you pick from. The other fields are typed in. To assign a data field to every cell make sure you have selected all rows. Since each Light Pole has a unique number, you will need to manually enter an alpha 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.



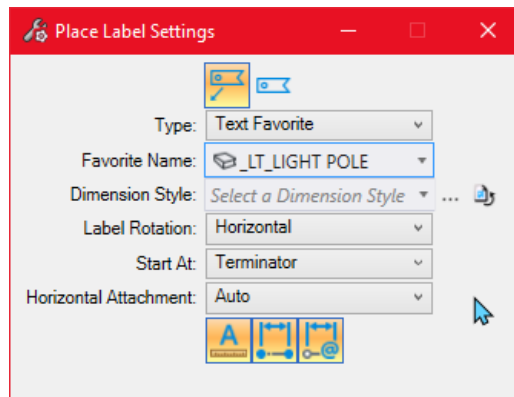
Exercise 6.5 Labeling Light Poles

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.

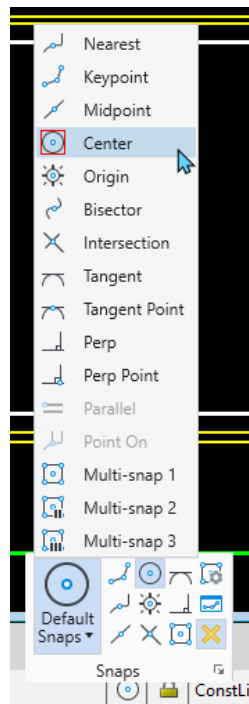
1. Continuing in the *DSGNLT01.dgn* file.
2. On the Drawing Production ribbon select Place Text



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

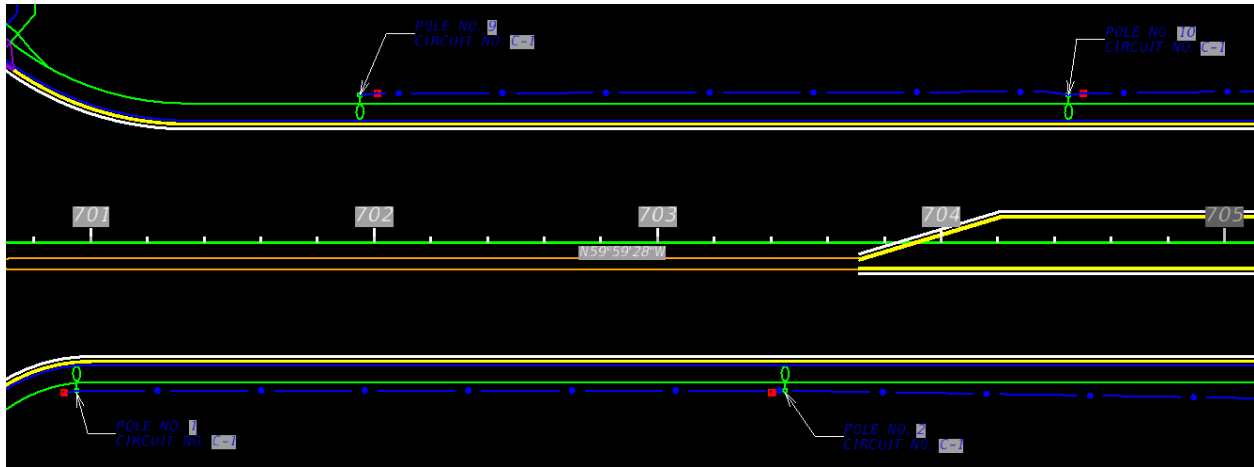


4. Set the default snap mode to Center.



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.

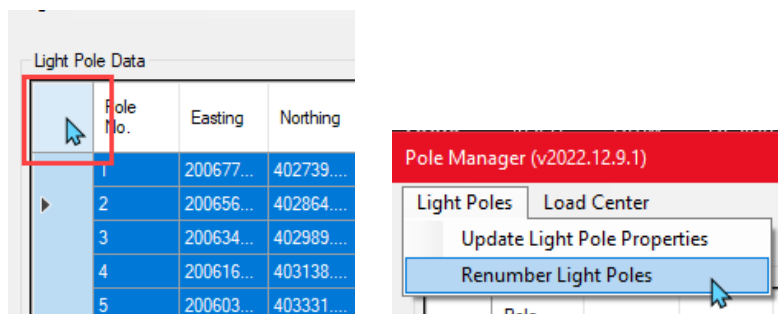
The shaded text in the label represents dynamic text, which will update as the properties are changed. This is very efficient when or if you must renumber the Light Poles.



Exercise 6.6 Numbering and Adding Properties to Light Poles

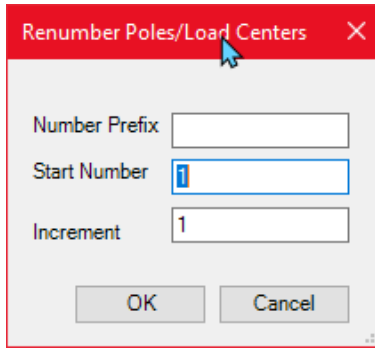
In this exercise, the designer will number each Light Pole that was placed in an earlier exercise.

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.

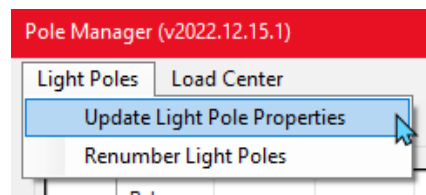
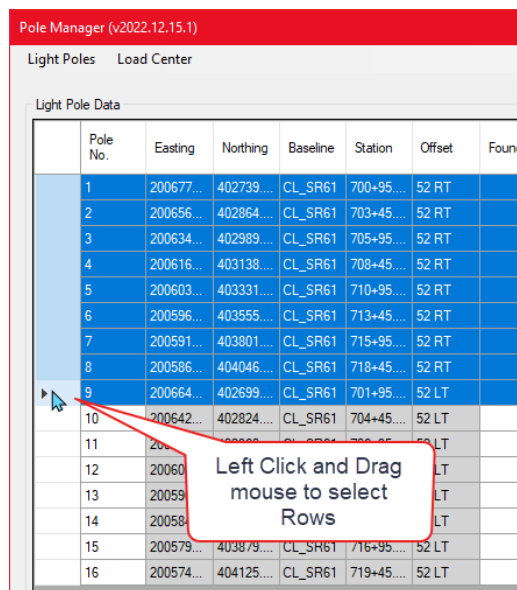
Notice how the right side of the road is numbered 1-8 and the left side is numbered 9-16.



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

Light Pole Data	
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...

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



7. 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.

The image shows a dialog box titled "Bulk Light Pole Data" with a red header. It contains a list of fields, each with a checkbox and a corresponding input field (text box or dropdown menu). The fields are: 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 #, and Maintaining Agency. The "Circuit #" checkbox is checked, and its input field is highlighted in a darker grey. At the bottom, there are "Select All" and "Select None" buttons, with a mouse cursor pointing to "Select None". Below these are "OK" and "Cancel" buttons.

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

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

Light Pole Data																					
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
1	200677...	402739...	CL_SR61	700+95...	52 RT		10'	3'	40'	1	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	LED Co...	15000	2	3000	5	250	480	A	B-1	FDOT

10. 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.

			B-7		0715 6...
			B-8		0715 6...

Process/Save Light Poles

Create Light Pole Report

Process/Save Load Center

Create Load Center Report

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

Light Pole Data

Pole No.	Easting	Northing	B:
1	2006779...	402739.6...	CL
2		02864.7...	CL
3		02989.3...	CL
4		03138.2...	CL
5	2006034...	403331.9...	CL

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

Bulk Light Pole Data
— □ ×

- Foundation Type Spread Footing ▾
- Arm Length 10' ▾
- Arm Rise 3' ▾
- Mounting Height 40' ▾
- # Luminaires 1
- Luminaire Type Conventional ▾
- Make/Model LED Cobrahead
- Lumens 15000
- IES Distribution 2 ▾
- CCT (K) 3000 ▾
- Tilt (deg) 5
- Luminaire Wattage 250
- Luminaire Voltage 480 ▾
- Load Center # A
- Circuit #
- Maintaining Agency FDOT

Select All Select None

OK Cancel

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.	Maintaining Agency	Pay Item
1	200677...	402739...	CL_SR61	700+95...	52 RT		10'	3'	40'	1	Convent...	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	Convent...	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	Convent...	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	Convent...	LED Co...	15000	2	3000	5	250	480	A	A-4	FDOT	0715 61...
5	200603...	403331...	CL_SR61	710+95...	52 RT		10'	3'	40'	1	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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	Convent...	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

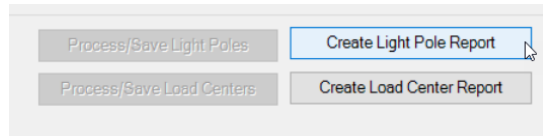
Looking at the properties of one of the Light Poles, you can also edit or add information and the next time the Light Pole Manager dialog is open your edits will be automatically added to the list.

PCGIT	
PayItemNumber	0715 61852
PayItemDescription	LIGHT POLE COMPLETE, F&I, STD POLE STD F...
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

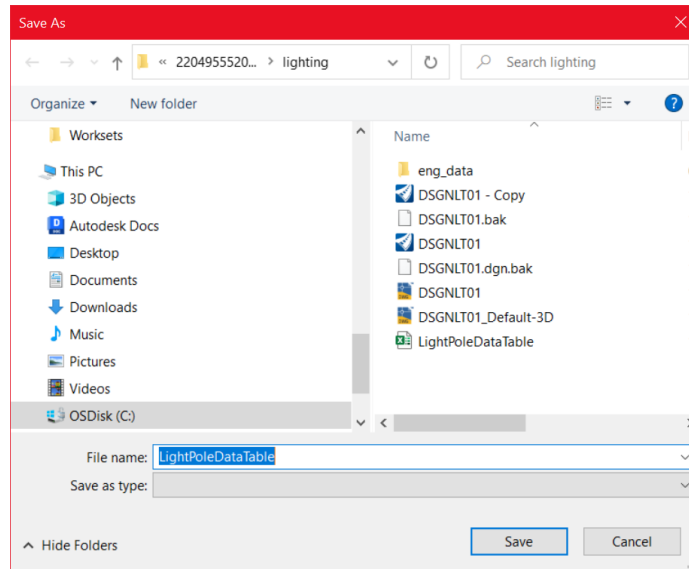
Exercise 6.7 Creating a Light Pole Report

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.

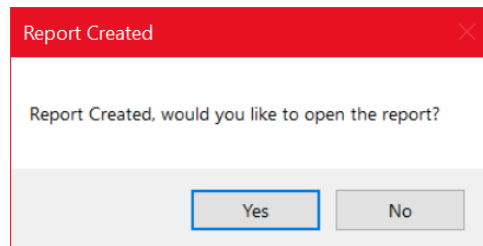
1. Continuing in the *DSGNLT01.dgn* file.
2. Open the **Light Pole Manager** application if not open.
3. Select **Create Light Pole Report**.



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**.



5. 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.



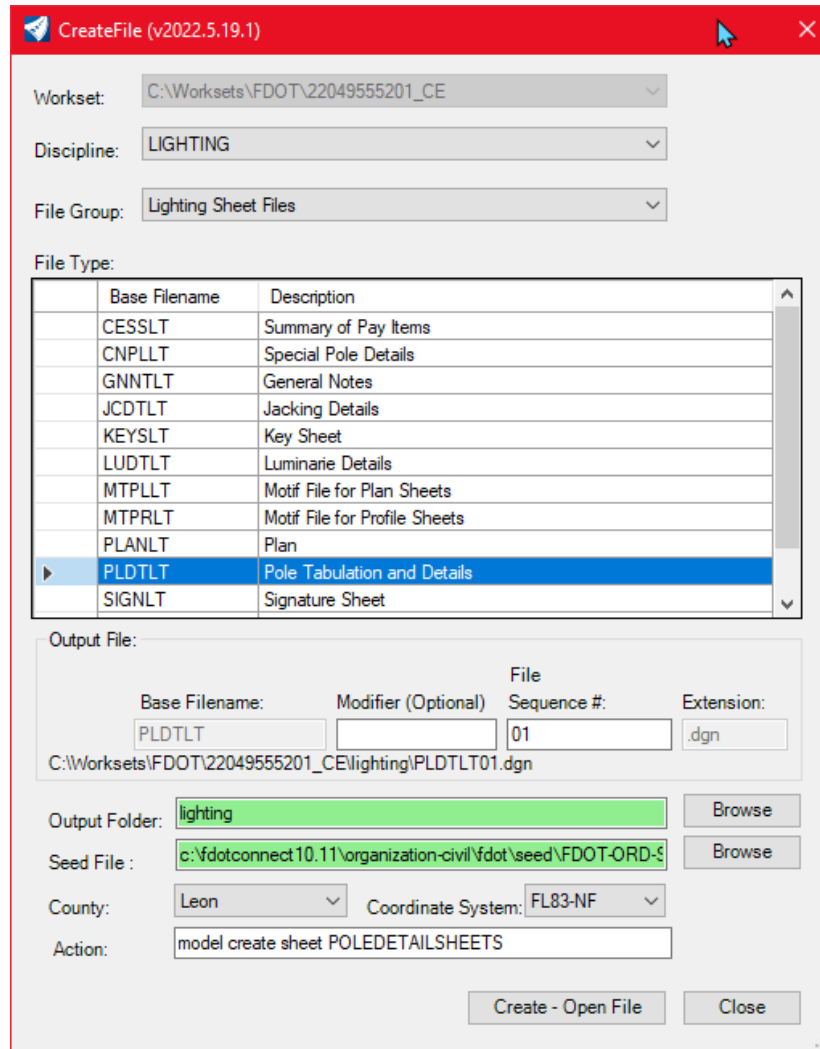
Lighting Data Table																							
Pole No.	Easting	Northing	Baseline	Station	Offset	Foundation	Arm Length	Arm Rise	Mount Height	Quantity	Luminaires	Type	Make/Model	Lumens	IES Dist Type	CCT(K)	Tilt (deg)	Luminaire Watts	Luminaire Volts	Load Center No.	Circuit No.	Maint. Agency	Pay Item
1	2006779.80	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	403383.55	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

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

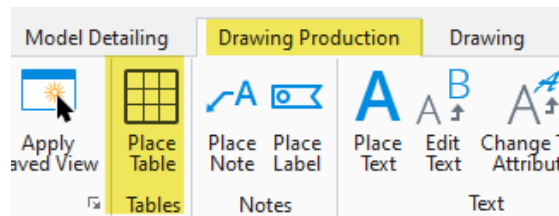
Exercise 6.8 Placing the Light Pole Data Table

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.

7. 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	
1	Lighting Data Table		
2	Pole No.	Easting	Northi
3	1	2006779.80	402739
4	2	2006563.32	402864
5	3	2006347.95	402989

After adjustment your file should match image.

Lighting Data Table	Pole No.	Easting	Northi	Baseline	Station	Offset	Foundation	Arm Length	Arm Rise	Mount Height	Quantity	Luminaire	Type	Make/Model	Lumens	IES Data Type	CECTA	Tilt (deg)	Luminaire Watts	Luminaire PSYS	Load Center No.	Circuit No.	Maint. Agency	Pay Item
1	2006779.80	402739.70	CL_S6E1	700+95.00	52 RT			19'	3'	40'	1	Conventional	LED CobaltLead	15000	2	3000	3	250	480	A	A-1	FDOT	0715.61852	
2	2006563.32	402864.73	CL_S6E1	703+45.00	52 RT			19'	3'	40'	1	Conventional	LED CobaltLead	15000	2	3000	3	250	480	A	A-2	FDOT	0715.61852	
3	2006166.87	403089.36	CL_S6E1	705+95.00	52 RT			19'	3'	40'	1	Conventional	LED CobaltLead	15000	2	3000	3	250	480	A	A-3	FDOT	0715.61852	
4	2005166.87	403138.28	CL_S6E1	708+45.00	52 RT			19'	3'	40'	1	Conventional	LED CobaltLead	15000	2	3000	3	250	480	A	A-4	FDOT	0715.61852	
5	2006034.72	403333.94	CL_S6E1	710+95.00	52 RT			19'	3'	40'	1	Conventional	LED CobaltLead	15000	2	3000	3	250	480	A	A-5	FDOT	0715.61852	
6	2005961.77	403355.75	CL_S6E1	712+45.00	52 RT			19'	3'	40'	1	Conventional	LED CobaltLead	15000	2	3000	3	250	480	A	A-6	FDOT	0715.61852	
7	2005914.83	403811.20	CL_S6E1	714+95.00	52 RT			19'	3'	40'	1	Conventional	LED CobaltLead	15000	2	3000	3	250	480	A	A-7	FDOT	0715.61852	
8	2005866.89	404046.66	CL_S6E1	716+45.00	52 RT			19'	3'	40'	1	Conventional	LED CobaltLead	15000	2	3000	3	250	480	A	A-8	FDOT	0715.61852	
9	2005841.19	402999.65	CL_S6E1	701+95.00	52 LT			19'	3'	40'	1	Conventional	LED CobaltLead	15000	2	3000	3	250	480	A	B-1	FDOT	0715.61852	
10	2005824.11	403214.68	CL_S6E1	704+45.00	52 LT			19'	3'	40'	1	Conventional	LED CobaltLead	15000	2	3000	3	250	480	A	B-2	FDOT	0715.61852	
11	2006006.75	402960.53	CL_S6E1	706+95.00	52 LT			19'	3'	40'	1	Conventional	LED CobaltLead	15000	2	3000	3	250	480	A	B-3	FDOT	0715.61852	
12	2006023.24	403150.14	CL_S6E1	709+45.00	52 LT			19'	3'	40'	1	Conventional	LED CobaltLead	15000	2	3000	3	250	480	A	B-4	FDOT	0715.61852	
13	2005980.16	403381.55	CL_S6E1	711+95.00	52 LT			19'	3'	40'	1	Conventional	LED CobaltLead	15000	2	3000	3	250	480	A	B-5	FDOT	0715.61852	
14	2005940.69	403674.19	CL_S6E1	714+45.00	52 LT			19'	3'	40'	1	Conventional	LED CobaltLead	15000	2	3000	3	250	480	A	B-6	FDOT	0715.61852	
15	2005983.25	403879.65	CL_S6E1	716+95.00	52 LT			19'	3'	40'	1	Conventional	LED CobaltLead	15000	2	3000	3	250	480	A	B-7	FDOT	0715.61852	
16	2005745.81	404125.11	CL_S6E1	719+45.00	52 LT			19'	3'	40'	1	Conventional	LED CobaltLead	15000	2	3000	3	250	480	A	B-8	FDOT	0715.61852	