

*State of Florida*  
*Department of Transportation*



# **FDOT Quantities using Civil 3D 2017**

**Workshop Manual**

November 2017

PRODUCTION SUPPORT OFFICE | CADD

TALLAHASSEE, FLORIDA

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

*By: Randy Roberts*



## *FDOT Quantities*

### **Description**

This workshop teaches students fundamental use of the FDOT Civil 3D State Kit , and the Florida Department of Transportation (FDOT) Computer Aided Drafting and Design (CADD) standard resources and applications to generate Quantity reports.

This workshop includes but is not limited to:

- General topics on Civil 3D
- Exploring the FDOT20xxC3D Desktop Folder
- Setting up Data Shortcuts Working Folder and Creating Data References
- Create File Application for Creating Project Base Files
- FDOT Entity Manager
- Using Model and Paper Space
- Using FDOT Takeoff Manager to generate different reports
- Linking Created Reports into the design file
- Creating a Summary of Pay Items

### **Prerequisites**

- Some manual drafting or related AutoCAD Civil 3D experience

-

### **Duration: 2 Hours**

## TABLE OF CONTENTS

<b>1</b>	<b>FDOT QUANTITIES IN CIVIL 3D</b>	<b>1-1</b>
	GENERAL INFORMATION	1-1
	EXPLORING THE FDOT20XXC3D DESKTOP FOLDER	1-1
	Exercise 1.1    Setting Data Shortcut Working Folder	1-2
	CADD STANDARDS & FILE CREATION	1-3
	<i>Creating the Project Base Files</i>	1-3
	Exercise 1.2    Create the Base Design Files	1-4
	Exercise 1.3    Create Additional Files	1-5
	Exercise 1.4    Building the design files with Data and X-references	1-5
	<i>Exploring Entity Manager (EMX)</i>	1-6
	<i>Entity Manager Menu Buttons</i>	1-6
	<i>Adhoc Attributes</i>	1-7
	DEFINING ADHOCS FOR QUANTITIES	1-8
	Exercise 1.5    Using Entity Manager (EMX) to create Pavement Shapes	1-9
	<i>Model &amp; Paper Space</i>	1-10
	Exercise 1.6    Creating different models in the same file for shape viewing	1-11
	<i>Hatching with Entity Manager</i>	1-12
	Exercise 1.7    Hatching Sod Areas	1-12
	<i>Running Reports with FTM</i>	1-13
	Exercise 1.8    Running a series of simple reports	1-13
	Exercise 1.9    Running Summary Tables	1-14
	<i>Linking Reports to the Design File</i>	1-15
	Exercise 1.10    Linking Summary Reports to Drawing File	1-15
	<i>Creating Summary of Pay Item Sheets</i>	1-16
	Exercise 1.11    Create the Summary of Pay Item Sheets	1-16

# 1 FDOT Quantities in Civil 3D

## GENERAL INFORMATION

This workshop reviews the FDOT20xxC3D working environment including how to create design files properly that meet Florida Department of Transportation (FDOT) CADD standards and introduces concepts and tools used to make producing plans more efficient. This manual refers to xx as being the latest version of the State Kit.

## EXPLORING THE FDOT20XXC3D DESKTOP FOLDER

The FDOT CADD software installer installs a folder named FDOT20xxC3D on the desktop. This folder contains shortcuts to applications used when working on the FDOT projects.

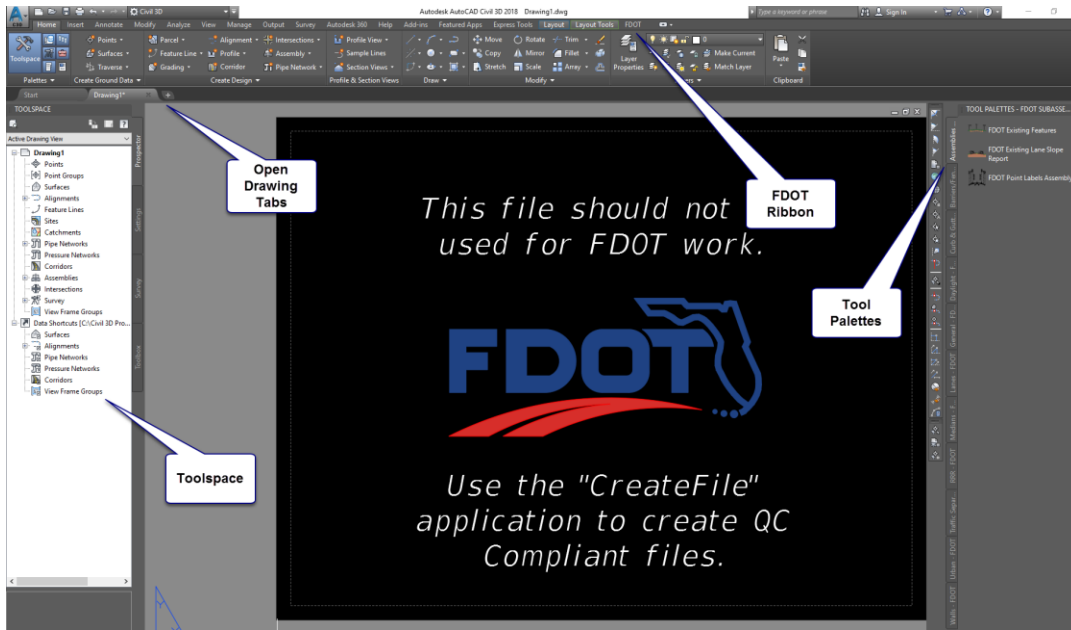
The figure below shows the contents of the FDOT20xxC3D folder.



Using these shortcuts to start the applications will provide the designer with the environment properly set with the FDOT CADD standards. The installer will place a shortcut on the desktop to start the State Kit. The shortcut icon is shown in the image above located on the top right.

*Note* When systems have AutoCAD Civil 3D installed along with The FDOT Civil 3D State Kit Suite installed, it is recommended the user start the State Kit with the desktop icon.

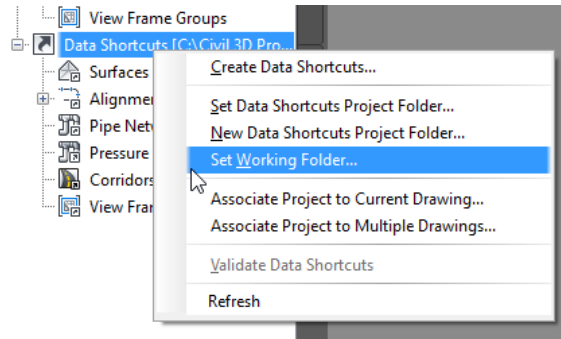
Double Clicking on the C3D20xx desktop shortcut starts Civil 3D in the FDOT environment. Selecting the FDOT Ribbon shows all of the applications and commands available to the designer. As shown below.



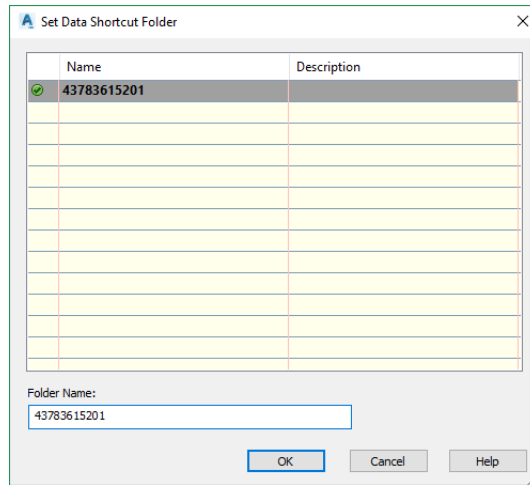
**Exercise 1.1 Setting Data Shortcut Working Folder**

If this is the first time you have opened the FDOT Civil 3D State Kit you will need to set the data shortcut working folder.

1. Hover your mouse over the word **Data Shortcuts** located in the toolspace and **Right Click** to bring up the following options.



2. Select **Working Folder** to browse to the Root folder location of your project (C:\e\Projects), be careful not to select the actual folder of your project.
3. Repeating the previous step, **Right Click** on the **Data Shortcuts** path again and select **Set Data Shortcuts Project Folder**. A list of projects will appear, select the following.



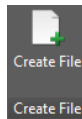
4. Select **OK** to Close the dialog.

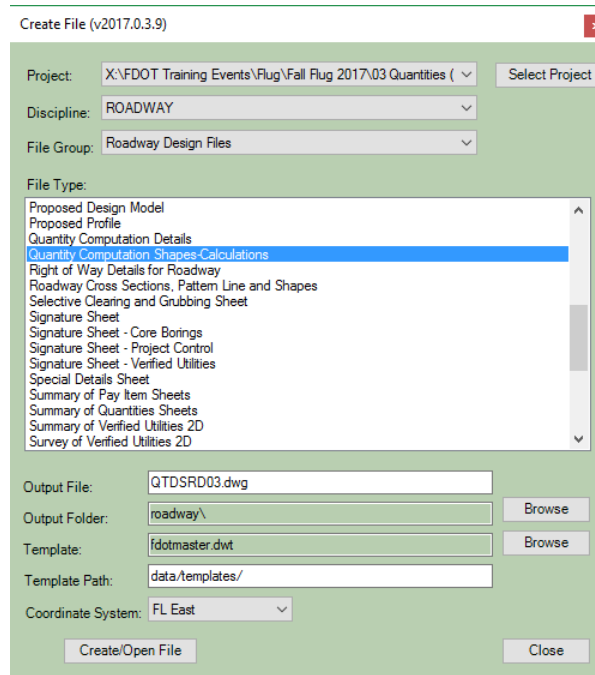
## CADD STANDARDS & FILE CREATION

The FDOT *CADD Manual* defines the naming convention used to create the different types of design files required in a project.

### CREATING THE PROJECT BASE FILES

The FDOT workflow uses the Create File application to create AutoCAD design files and other files in accordance with the FDOT standard file naming conventions. Create File uses an .xlsx Spreadsheet, called the Master Standards that is included when the State Kit is installed. The file contains all design file naming conventions along with the appropriate symbology (Layers, Colors, Line Types, etc.). The application can only be launched from inside Civil 3D. It is located on the Top Left of the FDOT Ribbon.






**Note** When the Create/Open File button is selected the file is created and is opened. The user can make as many files as needed in one session of the application. When all files are created select Close to close the dialog.


## Exercise 1.2 Create the Base Design Files

- **In this exercise, you will create Quantity Computation Shapes-Calculation file.**

**Note** The design file creation process is the same for any discipline.

5. Double Click on the FDOT20xxC3D Icon  on the desktop. At the time of this manual the 2018 Version is the most current. Your version may vary.
6. When Civil 3D is loaded click on the **FDOT Ribbon**.



7. Click on the **Create File** icon  to launch the application.
8. With the Data Shortcut Folder set in advance it is automatically filled in on the Project portion of the Create File application. If not, you can either exit and set the folder or you can select the Browse button to navigate to your working data shortcut folder.

**Note** The Coordinate system is set to FL East, this is because you set your data shortcut folder before creating your files. If not make sure the system is set to FL East in the Coordinate System pulldown.

9. Select the Discipline pull down and select ROADWAY.
10. In the *File Group* category, use the drop-down arrow to select **Roadway Design**. (This sets the file types to Signing & Pavement Marking files and sets the output folder to Signing.)



11. In the *File Type* category select the file group to **Quantity Computation Shapes-Calculations**. (This selection populates the *Output File and Template File* with the correct information.)

**Note** Create File/Project allows the designer to browse to a different **Output Folder** if needed.

12. Click the **Create/Open File** button at the bottom of the dialog to start the file creation process.
13. Click the **Close** button to close the dialog box.

**Note** Notice below the Create and Open File buttons that the file name is shown. If the file Dsgnsp01 already exists in this project, the application will increment the file name to Dsgnsp02 and will not overwrite the existing file.


### Exercise 1.3 Create Additional Files

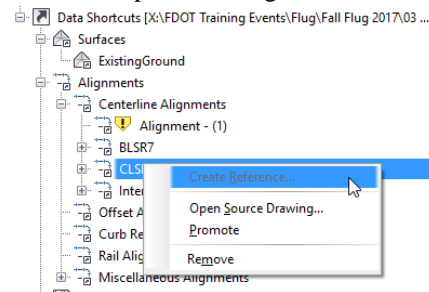
Use the Same File Group to Create Additional Design Files

1. Using the Create File Application select the **Summary of Quantities Sheets** file.
2. Select the **Create/Open File** button.
3. Repeat steps 1 thru 2 to create the **Summary of Pay Item Sheets** file. Note the different template used and when the file is created a Sheet Layout tab is included.
4. Click **Close** to exit the application.

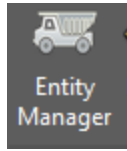
### Exercise 1.4 Building the design files with Data and X-references

In this exercise, the user will data reference in civil 3d objects and load Xref drawings. The user will also insert special blocks to use with this work book.

1. With the **QTDSRD01.dwg** open, in prospector under Data Shortcuts expand the Alignments tree until you see the **CLSR7** alignment and right click on it. Select Create reference.
2. Accept the defaults and select ok.
3. Type in **XREF** to launch the xref manager.
4. Select the  icon and load the **TOPORD01.dwg** as an **Overlay**.
5. For the purposes of this workshop we will need to insert a few blocks that are located in the **Block** folder within the project.
6. Set to Explode and insert the **SodBoundaries, AsphaltLimits, ClassProjectLimitMarkers, 2'PavedShoulderWidening, & ProposedSidewalk**.

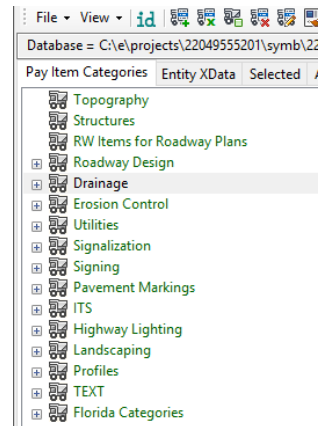


## EXPLORING ENTITY MANAGER (EMX)






The Entity Manager (EMX) application is located on the FDOT Ribbon on the Pay Item Tools panel. EMX uses a proprietary database provided by FDOT. The installation of the FDOT Civil 3D State Kit software places the latest EMX database on the local hard drive in the install folder.

For new projects, FDOT recommends starting the EMX application and let it build a new Payitemdb.xml file and save it in the project SYMB folder and rename it to the eleven-digit Financial Identification Number (FIN) number. For the 43783615201-project used as the example in this manual, the **Payitemdb.xml** file is renamed to 43783615201.xml. This allows the designer to modify the file for specific parameters, and protects it from any future maintenance updates overwriting the file. The latest FDOT Database file is located in the \\FDOT20xxC3D\apps\entitymanager\EntityManagerPayitemDatabase.txt.



It is highly recommended that every user that works on projects becomes very familiar with EMX, which sets symbology and automates quantity calculations for linear, each, volume, and area quantities.


FDOT specifically sets the database to create entities with the correct Layer symbology according to the FDOT CADD Standards. The database file is set up with discipline folders called categories. Inside of each category are items.

- **Pay Item Categories** - The basic component of the hierarchical tree is the Category, represented by a tab. The categories are divided by discipline. The figure above shows the Categories with an expandable “+” symbol.
- **Items** - The other database component is the item. An item could be a drafting item, a compute item or a default item. *Items* contain specific functions related to defined entity symbology or quantity calculations. *Items* are represented by one of three icons:
  -  **Default Icon** - This icon means items contain formulas and adhoc data used to set drafting standards that can be drawn in the file using the EMX drawing tools.
  -  **Drafting Standards Icon** - This icon means a formula is not assigned, but can still be drawn with the correct symbology.
  -  **Calculator Icon** - This icon means items have symbology attached and a formula or compute method. The item has no adhoc data.

## ENTITY MANAGER MENU BUTTONS

Entity Manager has a toolbar for easy access of different functions. Summarized below are the functions of each button. A later section in this chapter covers in more detail the tools used to create Pavement Marking plans.



-  - **Identify** Allows user to select an object in your file to read all the Xdata attached. You can also click in the link to get the adhoc data for editing.



- **Append** The append button allows user to select an item from the categories and append the pay item data to an object in the drawing.



- **Replace** The Replace button allows the user to make a selection from the categories and when the object is selected in the file the existing pay item data on an object will be removed and the new selection be added.



- **Hatch.** The hatch button is used to hatch shapes for area computations. An area id label is also placed when using this command.



- **Remove** The Remove button allows the user to remove all Pay item data from an object in the drawing file.



- **Edit.** The Edit button allows the user to select an object to edit pay item data such as adhoc information or add notes.



- **Match Properties** The Match properties button behaves like the AutoCAD version with the added benefit of matching pay item data and symbology from a source object to a target object.



- **Label Properties** The Label properties button controls the shape label options such as font, size, rotation, suffix, prefix, & layers.



- **Highlight Options** The highlight options button control how objects are highlighted so viewing objects with or without pay item data is easier.



**Drawing Tools** These tools provide the user ability to use AutoCAD drawing commands to draw entities while having the selected pay item data attached while also using the correct symbology.

The drawing Tools from Left to Right

- Line
- Polyline
- Polygon
- Rectangle
- Arc
- Circle
- Ellipse
- Ellipse Arc
- Insert Block
- Offset
- Multi Lines

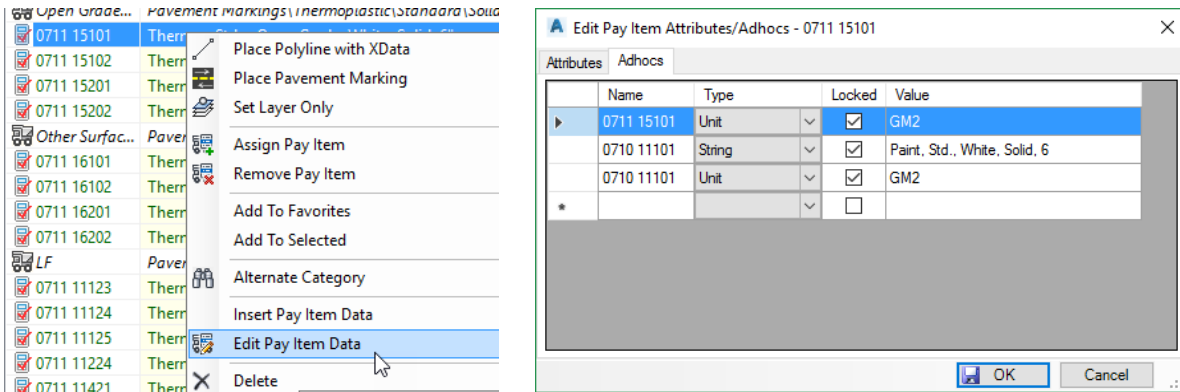
## ADHOC ATTRIBUTES

An Adhoc Attribute is additional information about a particular entity. Look at it as another property for the AutoCAD entity, i.e. *Layer, Color, Weight, and Style.*

By placing an Adhoc on the line, the designer is giving that line additional information. That information could be a chain name, cross slope, profile name, thickness, etc. It is almost limitless as to what can be associated to an entity with Adhocs. Other down-stream applications use these Adhocs.

Some Adhocs are placed in the background and the designer does not interact with them.

The figure below shows the Adhocs that are associated with an item from Entity Manager. These Adhocs are part of the item and are set by default. To open the adhoc editor, select a pay item in the category list and Right Click and select Edit Pay Item Data. Another way to get to the editor is to use the ID button on EMX and select an already placed object, a blue link will appear in the EMX interface you can click to open the editor.



Other Adhocs are interactive meaning the designer must fill in the parameters. An example is placing guardrails. There are adhocs added to the line that must be defined by the designer.

*Note Adhocs with values displayed in red are locked for modification.*

Adhoc Attributes are comprised of three types of information that must be defined:

- **Name** - The *Name* is an identifying term such as the pay item number used that will be picked up by the takeoff manager.
- **Type** - The *Type* identifies the nature of the information, and has various options: Numeric, String, Unit, Quantity, and Remarks.
- **Value** - The *Value* is the actual information used by EMX and takeoff manager picks up, and is determined by the Type. For example, if the Type setting is Numeric then the Value must be a number and will use it as a number.

## DEFINING ADHOC FOR QUANTITIES

FDOT has set up Adhoc Attributes for many of the Items in the Entity Manager. The functionality of these Adhocs range from setting variables used in the calculation of quantities to adding notes for later retrieval. It is important to note that in many cases specific projects may require modifying these Adhoc values. The creation process of design entities using EMX will assign the default. FDOT recommends the review of these entities to ensure the correct values are set.


To calculate a quantity using adhocs, the Compute Parameters must be set to Adhoc Attributes and adhocs must consist of 1 to 3 set on an entity. As a minimum, an adhoc using the pay item as the name, type set to Unit, and the value set to either the Standard Unit or an equation. If this is the only adhoc set, then takeoff manager will use the item description. If this should be different, a second string adhoc, using the same name as the unit adhoc, can be set with

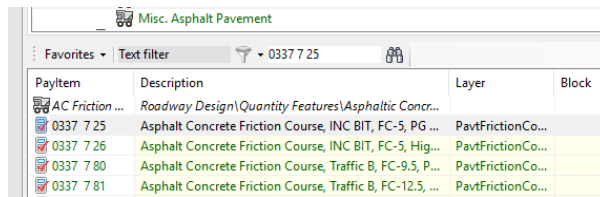
the desired description. A third adhoc type, Quantity, may be used to override the calculated quantity from the design file.

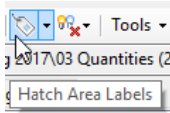
**Note** Place these adhocs on the entities *BEFORE* running takeoff manager.

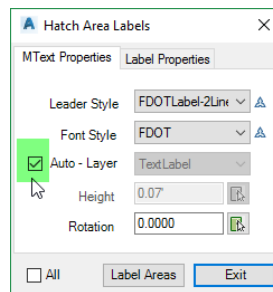
For more detailed information please reference the user guide located in the Entity Manager folder or view the quick clip video.


### Exercise 1.5 Using Entity Manager (EMX) to create Pavement Shapes

1. Still working in the **QTDSRDxx.dwg**, switch to the FDOT Ribbon and click on Entity Manager 
2. In the *Pay Item* search box enter **0337 7 25** for the Friction Course Pavement, left click on the number to select it.



3. Click in the Hatch Area Labels to open the editor. 
4. Toggle on **Auto-Layer** and select Exit. This change will put the labels on the same layer as the hatch so it will be easier to see the hatches as they will be on top of each other.



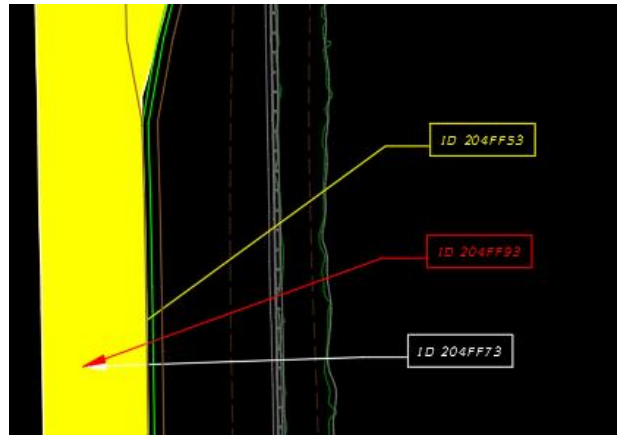
5. While in the Model Tab with the Friction Course still selected, pick the EMX Hatch button  and use the Select Object option to select the *Asphalt Limits Closed Object Polyline*. Hit Enter to allow the Label to be placed by the user out of the way of the hatch. Left click to the right outside of the surface boundary.

**Note** Notice the label is the same color as the hatch indicating it is on the same layer.

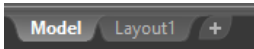
6. Repeating the steps for the other courses, enter in **0334 1 53** for Superpave and select it in the list.
7. Select the Hatching Icon on EMX, notice that the adhoc/attribute dialog box opens, change the thickness to **1.5"** and select ok.
8. Select the same boundary and move the label underneath the previous label you placed.

9. Repeat above steps for pay item number **0285706** and select the same boundary.

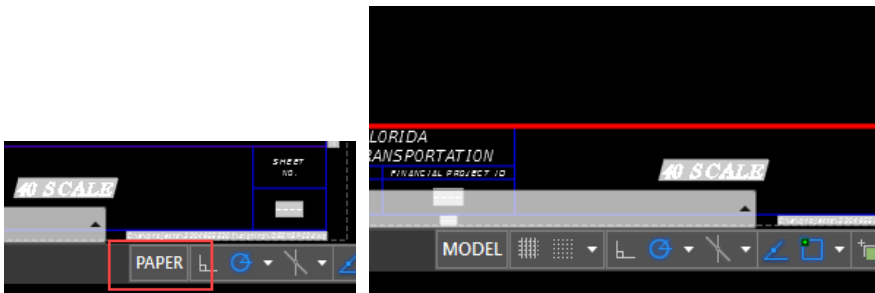
Your drawing should look like image below.



## MODEL & PAPER SPACE



The Model tab located on the bottom left corner allows the user to view the overall project as it resides in real time coordinates. The Layout tabs represent an individual sheet as it will be printed.



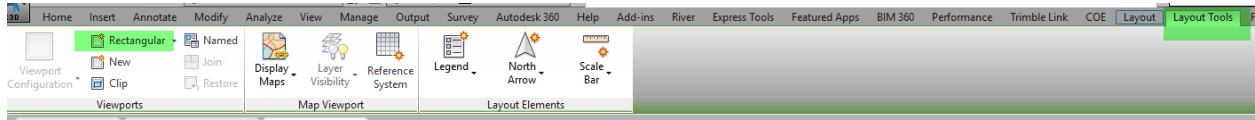
A **sheet or viewport** when present has two additional buttons called Model & Paper. The default when created is called Paper, which represents Paper Space. Paper Space is a visual representation of how a sheet will print and any text or line work drawn in Paper space is equivalent to drawing on a sheet of paper. It is recommended that details and notes that are not part of a dynamic design or tied to any coordinate zone be placed in Paper space. If you click on the word Paper or double click within the View Frame itself the Model becomes active and the word paper is replaced by the word model. An active viewport is denoted by a thick red border around the view frame as shown above. A view frame is created for the purpose of looking at a portion of the drawing model at an exact scale that will be printed as a sheet, think of it as a window through your sheet border at an exact scale with the correct coordinates. View Frame rotation angles can be manipulated without rotating your project, which makes labeling and the layout look perpendicular to your border.

Along the bottom is the viewport lock symbol. It is important to lock your viewport when you are finished editing the scale or location of your model drawing.

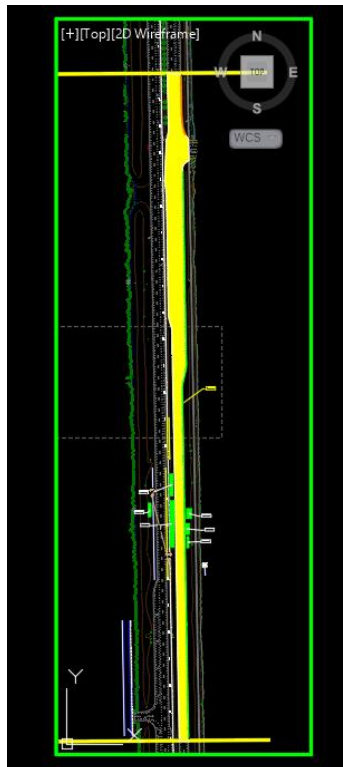


**Exercise 1.6 Creating different models in the same file for shape viewing**

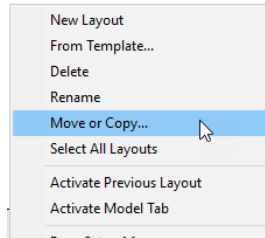
In this exercise, we will be creating viewports and manipulating layers for easier viewing of the pavement hatching which reside on top of each other, this is a different approach to the same problem that has been brought to my attention. One of the ways I have shown before is Layer States. I believe this new approach is simpler and works best.



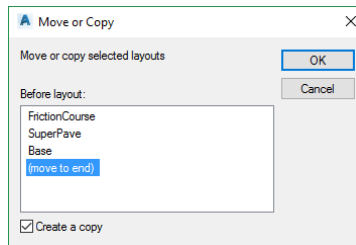
1. Continuing with the **QTDSRDxx.dwg**, click on the layout tab next to Model along the bottom.
2. Change the ribbon to the **Layout Tools**.
3. Click on the **Rectangular** button or type in **Viewports** on the command line.
4. In the drawing space left click and drag the mouse diagonally and left click again, you can adjust the view port by clicking on the grips and moving the border.
5. Zoom Extents and then change the scale along the bottom to 1"=40', adjust the viewport to include the two Yellow lines representing the project limits you inserted earlier.
6. Lock the viewport when satisfied. The drawing with your new viewport should resemble image below.



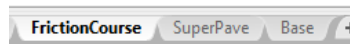
7. Right Click on the Layout1 and select **Rename**.
8. Type in **FrictionCourse**.
9. With the Viewport set, **Right click** on the **FrictionCourse** Layout and select **Move or Copy**



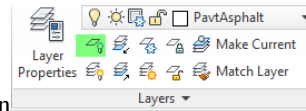
10. Make the changes as shown and click OK.



11. Right Click on the name and rename it to **SuperPave**.
12. Copy and Rename a third Layout to **Base**. Layouts should look like below.



13. Switch back to the **FrictionCourse** layout and double click in the viewport to make it active (model space).



14. Now turn off the Layers using the light bulb icon placed that are associated with the **SuperPave** and **Base**. Select the Labels EMX
15. Switch to the **SuperPave** Layout and cut off the layers; **PavtFrictionCourse (Yellow)** & **PavtBase (Red)**
16. Switch to the **Base** layout and cut off the layers **FrictionCourse** and **SuperPave**

Now you can switch between the layout tabs to view the different pavement shapes in the same model. The FDOT Takeoff Manager will still pick up all quantities regardless if the layer is turned off.

## HATCHING WITH ENTITY MANAGER


Creating Sod areas is a crucial part of FDOT plan production. This section will show you how to use EMX to place hatching and how to navigate between the hatched shapes easily.

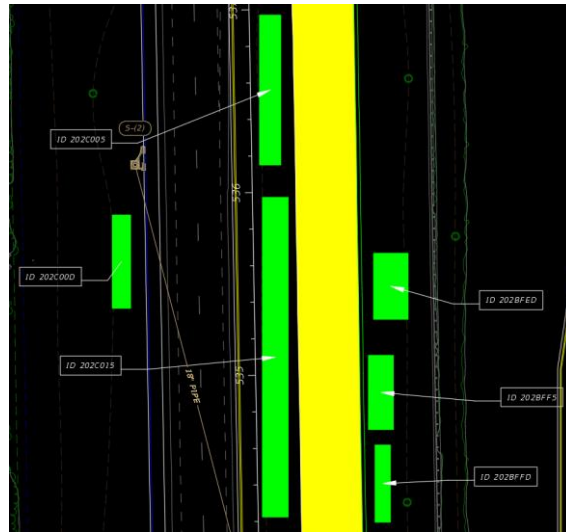
### Exercise 1.7 Hatching Sod Areas

In this exercise, the student will hatch the already drawn boundaries in the design file.

1. Still working in the **QTDSRDxx.dwg** open Entity Manager if closed.
2. Switch to the **Model** tab.



3. In the Text filter box type in **SOD**.
4. Select Pay Item Number **0570 1 2** (Performance Turf, Sod).
5. Select the Hatching icon along the top of EMX .
6. Select the **green rectangles** and hatch and label them **One** at a time placing the label out of the way.
7. Your drawing should look like below.



**Note** Keep in mind if you draw a rectangle under the sod influence and then hatch it with a shape, the quantity will quantify twice. Only use regular AutoCAD to draw rectangles to use as shape boundaries. You can delete them after hatching with EMX.


## RUNNING REPORTS WITH FTM

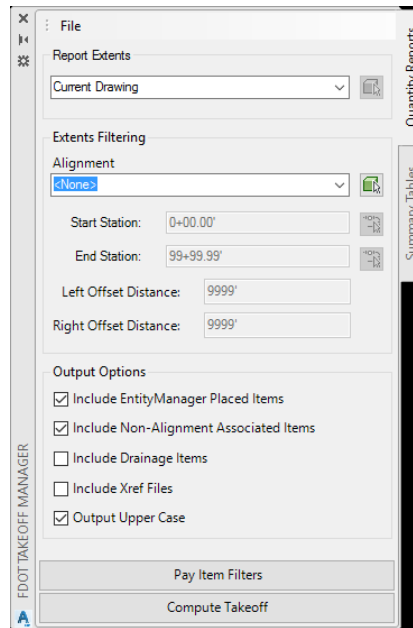
This section will introduce the user to FDOT Takeoff Manager that comes with the FDOT Civil 3D State Kit. The user will set up report locations and then use the data to do a simple report or generate automated summary boxes that can be linked into the design file from Excel.

### **Exercise 1.8** *Running a series of simple reports*

1. Still working in the QTDSRDxx.dwg, switch to the Model tab if not already selected.



2. On the FDOT Ribbon click on the Takeoff Manager Icon  Remain on the **Quantity Reports** tab.



3. For extents filtering select the alignment from the pull down, in this case **CLSR7**.
4. Leave everything else as listed and select **Compute Takeoff**.

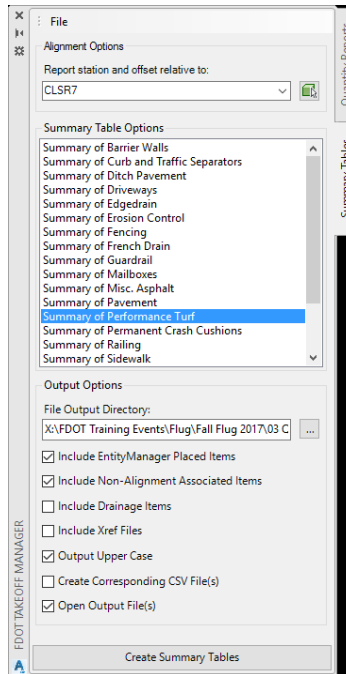
Pay Item	Description	Object Name	Quantity	Unit	Baseline Alignment	Start Station	End Station	Min Offset	Max Offset
0285706	OPTIONAL BASE, BASE GROUP 06	HATCH	12644.84	SY	CLSR7	526+91.24	551+99.85	6.70 RT	98.75 RT
			Quantity Total:	12644.84					
0570 1 2	PERFORMANCE TURF, SOD	HATCH	39.64	SY	CLSR7	534+18.31	534+60.68	63.81 RT	73.02 RT
	PERFORMANCE TURF, SOD	HATCH	273.72	SY	CLSR7	534+22.13	535+97.31	2.32 RT	19.54 RT
	PERFORMANCE TURF, SOD	HATCH	61.74	SY	CLSR7	534+68.94	535+09.80	61.10 RT	75.51 RT
	PERFORMANCE TURF, SOD	HATCH	76.05	SY	CLSR7	535+29.12	535+65.65	65.01 RT	84.56 RT
	PERFORMANCE TURF, SOD	HATCH	57.08	SY	CLSR7	535+37.89	535+89.14	66.70 LT	77.68 LT
	PERFORMANCE TURF, SOD	HATCH	106.36	SY	CLSR7	536+14.82	536+97.07	4.18 RT	17.33 RT
			Quantity Total:	614.59					

5. The FTM report viewer opens with all objects that have pay item information on them. Notice the Pulldown on the bottom left which contains the report types, **Area, Count, Linear, & Volume**.

You can save the reports as an **excel, pdf, or word** document. Typically, you would save as an excel file so that you can cut and paste data into a pre-formatted spreadsheet that is delivered with the state kit.

### Exercise 1.9 Running Summary Tables

1. Switch to the **Summary tables** tab, this is where the automated tables reside.
2. Set Alignment to **CLSR7**.
3. Select the **Summary of Performance Turf** for the report option.
4. For file output directory select the **Calculations** folder in your project.
5. Make other changes as shown below.



6. Select **Create Summary Tables**.
7. The report runs and then opens excel with the report already filled in. A new feature is that the extra columns that are not used are deleted before it opens, saving the user editing time.

SUMMARY OF PERFORMANCE TURF								
LOCATION	SIDE	AREA ID	LENGTH	WIDTH	PERFORMANCE TURF (SOD)		DESIGN NOTES	CONSTRUCTION REMARKS
					0570	1 2		
STA. TO STA.					SY			
					P	F		
534+18.31 to 534+60.68	RT	202BFFD				39.6		
534+22.13 to 535+97.31	RT	202C015				273.7		
534+68.94 to 535+09.80	RT	202BFF5				61.7		
535+29.12 to 535+65.65	RT	202BFED				76.1		
535+37.89 to 535+89.14	LT	202C00D				57.1		
536+14.82 to 536+97.07	RT	202C005				106.4		

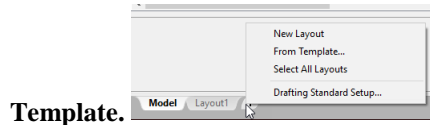
8. Some errors may occur now, so save as to rename the report so we can link it
9. Repeat the above steps with the same settings and run the **Summary of Pavement** report.
10. Now select two reports to run at once, hold the **CTRL** key and select the **Summary of Guardrail & Summary of Curb and Traffic Separators**.
11. Select **Create Summary Tables**.

### LINKING REPORTS TO THE DESIGN FILE

In this part of the exercise the user will create additional files if needed and use Autodesk’s **Data Link Manager** to link the spreadsheet reports previously created into the sheet. The reports remain dynamic meaning that any editing done in the excel file will propagate to the drawing file. You also can edit the cells in the drawing and save the change back to the excel file.

#### **Exercise 1.10**      *Linking Summary Reports to Drawing File*

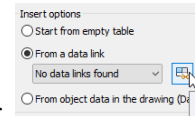
1. Open the previously created **SUMQRDxx.dwg**.
2. Right Click on the plus symbol on the bottom where the layout tabs are located and select **From**



**Template.**

(C:) > FDOT2017.C3D > Data > Templates > Sheets > Roadway

3. Navigate to the **SHPLAN.dwt**, which is the FDOT Sheet border.
4. When the scale dialog appears select **1Scale**, since we will be working in paper space.
5. Click on the new **1 Scale** layout and delete the North arrow.
6. With the cursor on the command line, type in **Tables\_dp** to change the current layer.
7. On the FDOT Ribbon select **Create Table**



8. Select **From a data link** and launch the data link manager.
9. Select **Create a new Excel Data Link** and name it **Sod** and select **OK**.
10. Browse to the **Summary of Turf and Prepared Soil** report you saved earlier.
11. Accept defaults and click **OK** three times.
12. It will take a few seconds or longer for the report to appear with the cursor, when it does appear **left click** to place it in the upper Left corner of sheet.
13. Left click in the cell that says **Location**, click the top blue grip, click again. The error with the collapsed columns repairs itself.


**Note** *The issue with extra rows can be fixed by opening the excel file and deleting empty rows. The drawing file will update one you save and close the excel file. Civil 3D treats these updates like data shortcuts with the notification balloon located in the bottom right corner.*

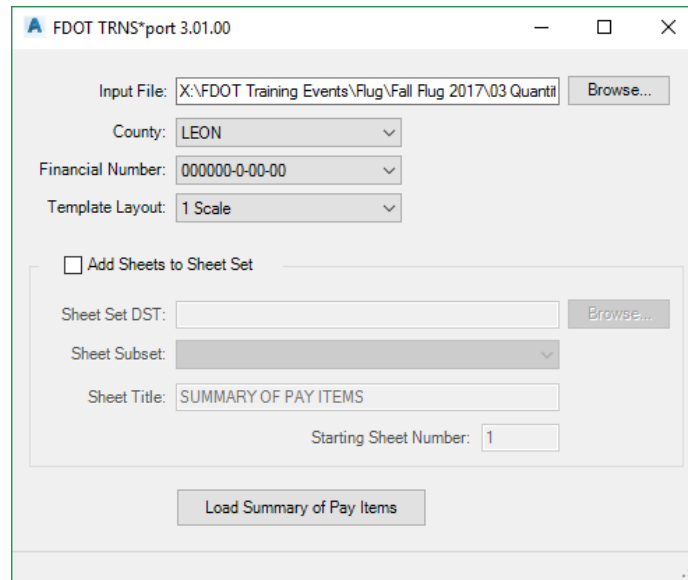
If time permits copy the layout and delete the **Summary of Performance Turf** report and link the **Summary of Pavement**.

## CREATING SUMMARY OF PAY ITEM SHEETS

In this final exercise the user will utilize the data provided by the Designer Interface that was formatted for them to use. You will use the **TRNS\*port Sheets** command located on the FDOT Ribbon.

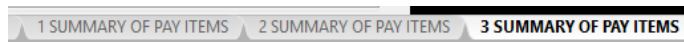
### **Exercise 1.11** *Create the Summary of Pay Item Sheets*

1. Open the previously created **CESSRDxx.dwg**, or create a new **Summary of Pay Item Sheets** drawing file. Notice the drawing already has a 1 Scale sheet layout ready to use with a sheet border.
2. On the FDOT Ribbon click on the **TRNS\*port Sheets** icon  **TRNS\*port Sheets**
3. Browse to the **T8888.xml** file in your calculations folder.
4. Make the following changes to match image below.



**Note** You have an additional option to add these sheets to an existing Sheet set and name and number them. This exercise we will be creating the sheets in the current drawing, You can always add these layouts to a sheet set at a later time.

5. Click **Load Summary of Pay Items** to launch the command.
6. The additional sheets are created, populated, and are located at the bottom. In this instance you should have 3 new layouts created.



*This Concludes the Quantities Workshop*

*Thank you for attending.*