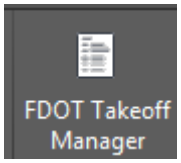
Civil 3D Plan Quantities Using FDOT Takeoff Manager



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Centennial FDOT 1915 ★ 2015

What's New with TO Manager?

A few enhancements were added to the takeoff manager since the initial release.

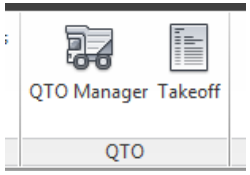
1. Since Entity Manager added the capability to add alignment association the takeoff manager had to do the same which added a few more options when you run it.

2. Additional Summary Tables added to the list

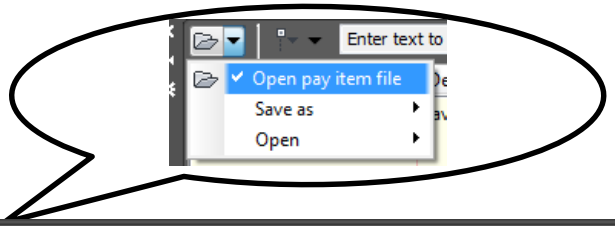
And if this is your first time seeing and using FDOT Takeoff Manager this document will get you started.

Drawing Setup

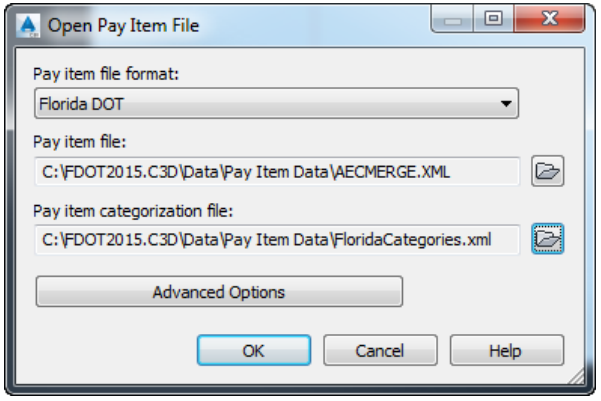
If this is the first time you are calculating quantities in a drawing file there is initial setup you must perform in each new file or you will run across a error message stating that it can't find items with pay item data attached. The good news is you only have to set this up once in the same file.



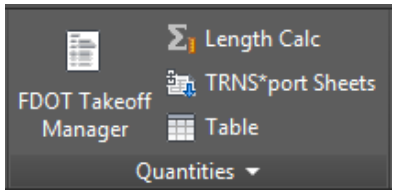
Click on the QTO Manager located on the Analyze Ribbon. If you see no data in the panorama (as seen below) do the following



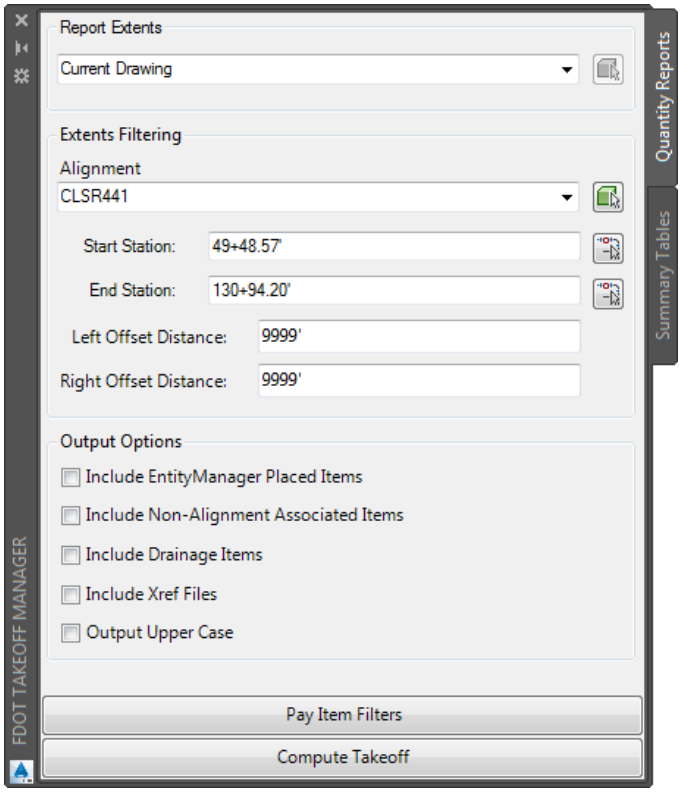
Open Pay Item File and going from top to bottom make the following selections

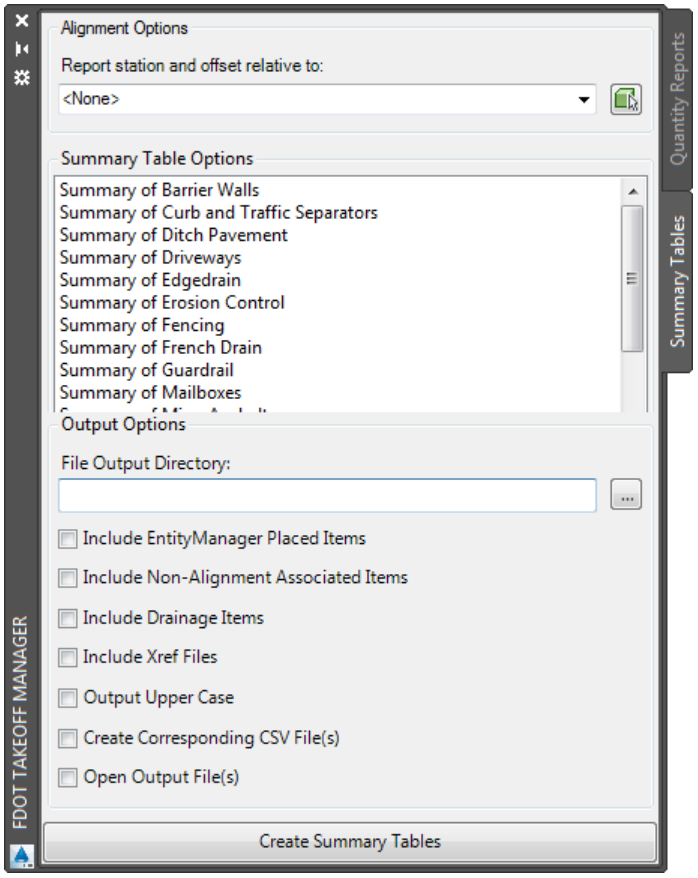


The Interface



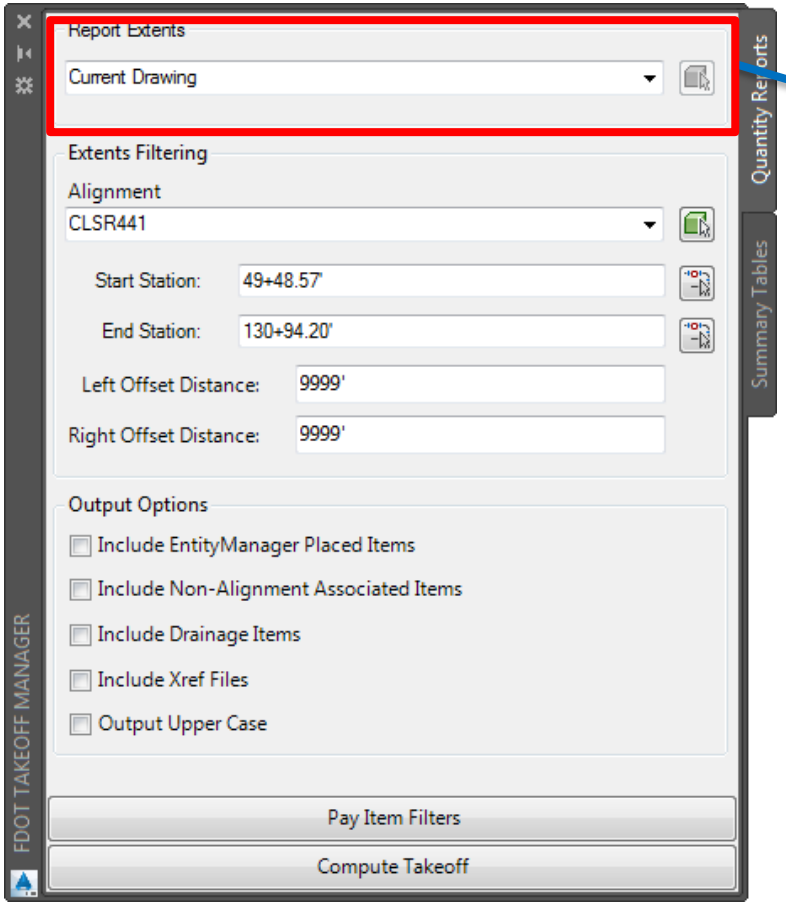
The Takeoff Manager Application Icon is located on the FDOT Ribbon in the Quantities Section. Future reference of Takeoff Manager in this document is TM

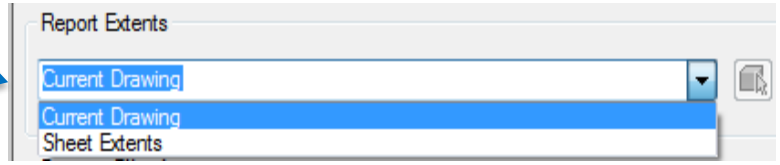




The application dialog box contains 2 tabs “Quantity Reports” and “Summary Tables”
The Dialog behaves like other AutoCAD boxes.
You can allow docking, Auto-hide, etc.

“Quantity Reports” Tab

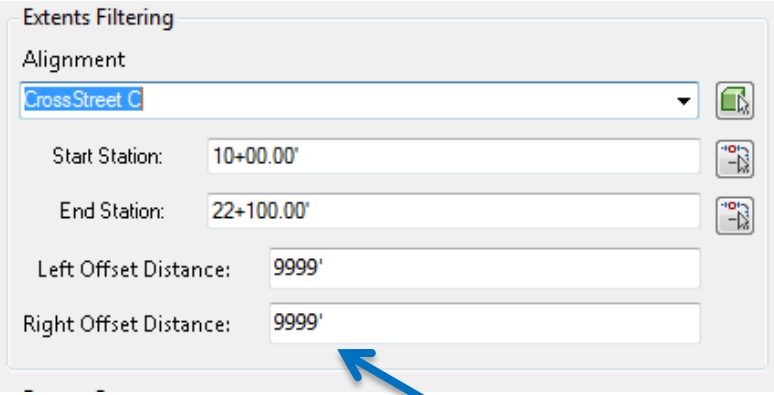




The Report Extents controls what you are reporting on. The default is the Current Open Drawing which is everything in the open drawing in Model Space.

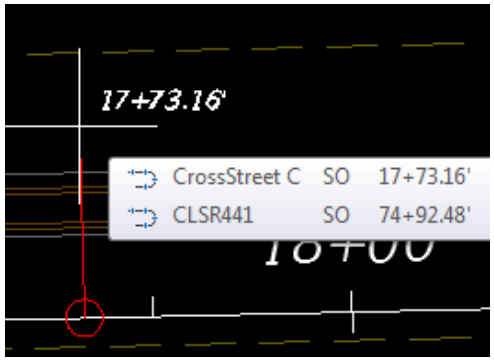
If you select Sheet Extents TM will be grayed out and you will be directed to the AutoCAD QTO dialog box where you can get individual sheet quantities. All individual sheet quantities are calculated from match line to match line in each sheet tab. Keep in mind that you can only do one sheet at a time in this mode and you have to click in each sheet tab to make it active to run this feature. When you close the QTO dialog box full functionality returns to TM.

“Quantity Reports” Tab



The Extents Filtering allows you to select the Alignment in the drawing that you want to report off of.
You can use the pull down and select from the list of Alignments in the file OR you can pick the select from drawing icon which will close the box so you can pick it on your screen.

You can control the offset distance by entering a search swath width, which is important if you are reporting off of one specific Alignment among possibly many Alignments.

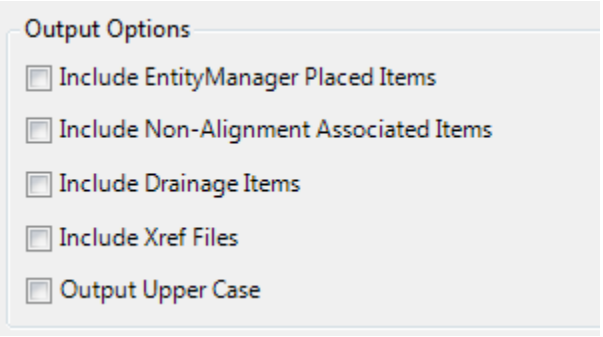


After selecting the Alignment you can either enter a station range or select the pick from drawing icon which will activate a red jig so you can pick your stations along the selected Alignment. The default is the entire length unless you choose otherwise.

“Quantity Reports” Tab

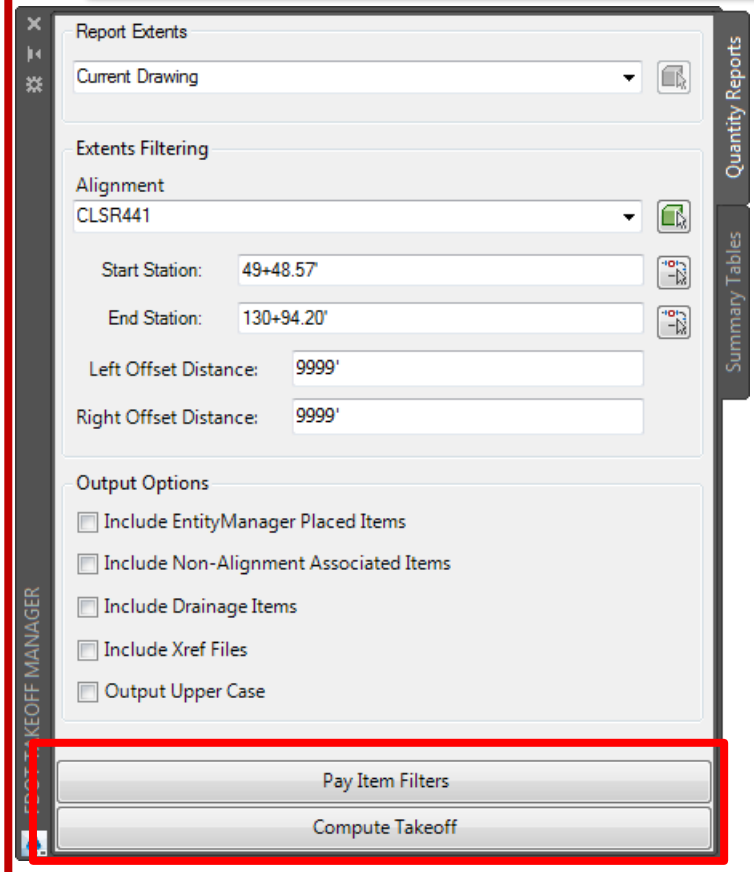
Include Entity Manager Placed Items – Reports back only items found that were placed exclusively with EMX (Entity Manager)
Include Non-Alignment Associated Items – Reports back items that were placed using *“Pavement Markings”* *“FDOT Signs”* and *“Place Block Group”*
Include Drainage Items – Reports back Drainage parts (Structures & Pipes) also any other network items that use part families
Include Xref Files – When selected and you have Xref’s loaded in your current drawing file it will return all objects with pay items found in all Xref’s and current file
Output Upper Case – When selected the report will return in all upper case. If not selected it will return as entered.

When checked the application will report back the following

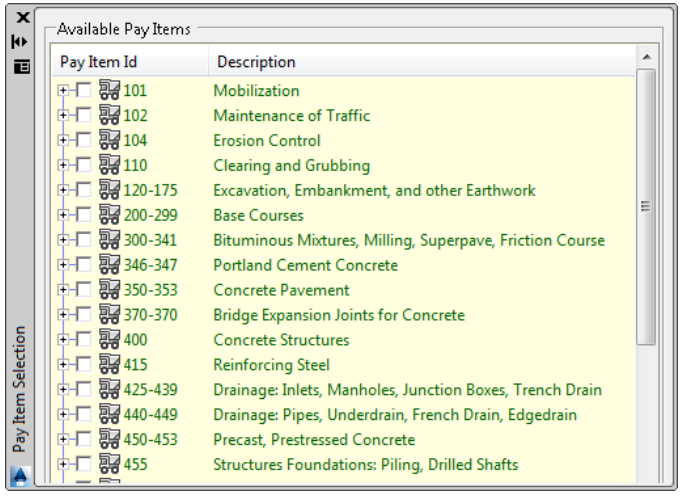


TIP – You can select all that apply, however if you are running quantities from traffic plans and objects with shapes you will want to select option 1 & 2 since some objects would have been placed by both EMX and the other tools mentioned in the descriptions

“Quantity Reports” Tab

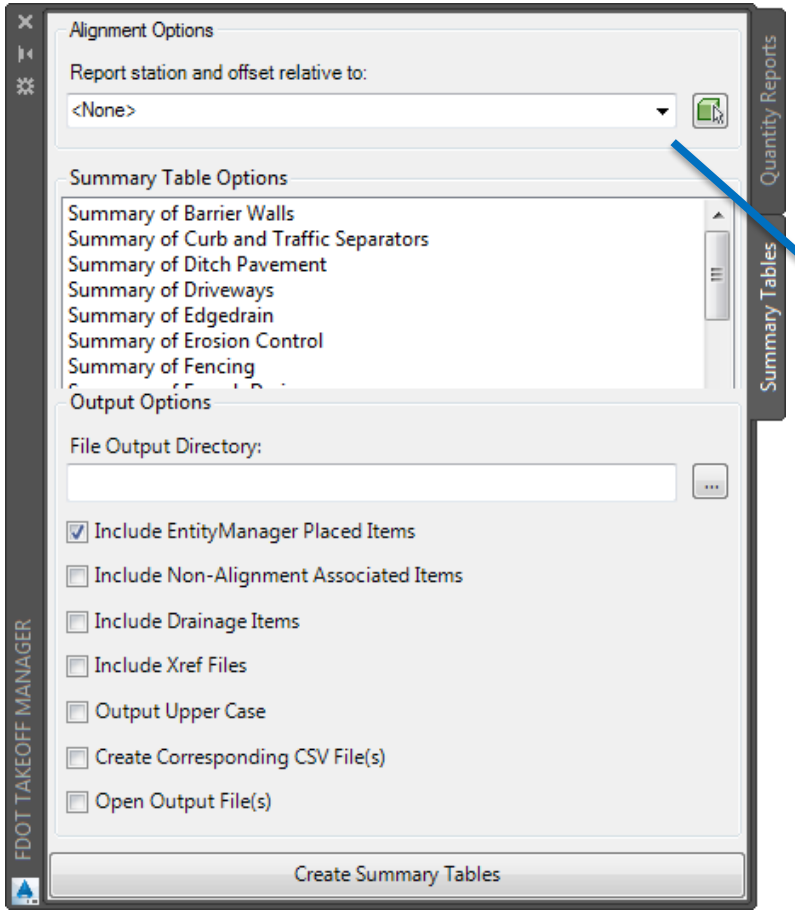


Pay Item Filters are used if you want to run a report for certain objects only, for example if you had a file with many different object categories and only wanted to know how much Reinforcing Steel was called for you would check the “415” id box in the diagram below and all other pay items would be ignored until you cleared the selection box.

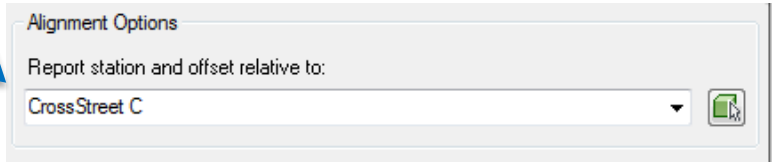


Compute Takeoff launches the process based off of your selections.

“Summary Tables” Tab



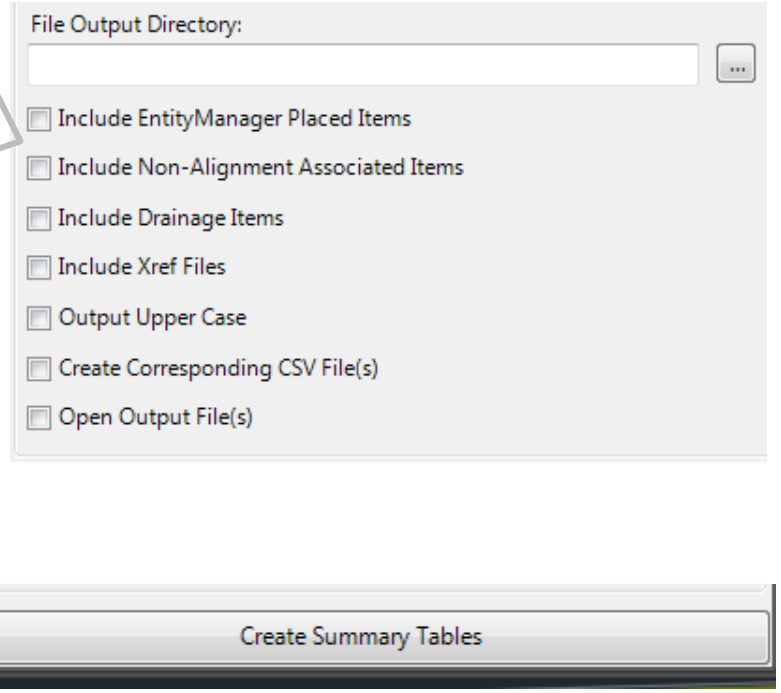
The Alignment Selection Option behaves identical to Alignment selection process on the Quantity Reports tab. It allows you to select the alignment from the list or select it in the drawing.



The Summary Table Options contains a list of pre-formatted excel files that will Auto populate when selected and a report generated. You can run multiple reports simultaneously and each will open in its own Excel window

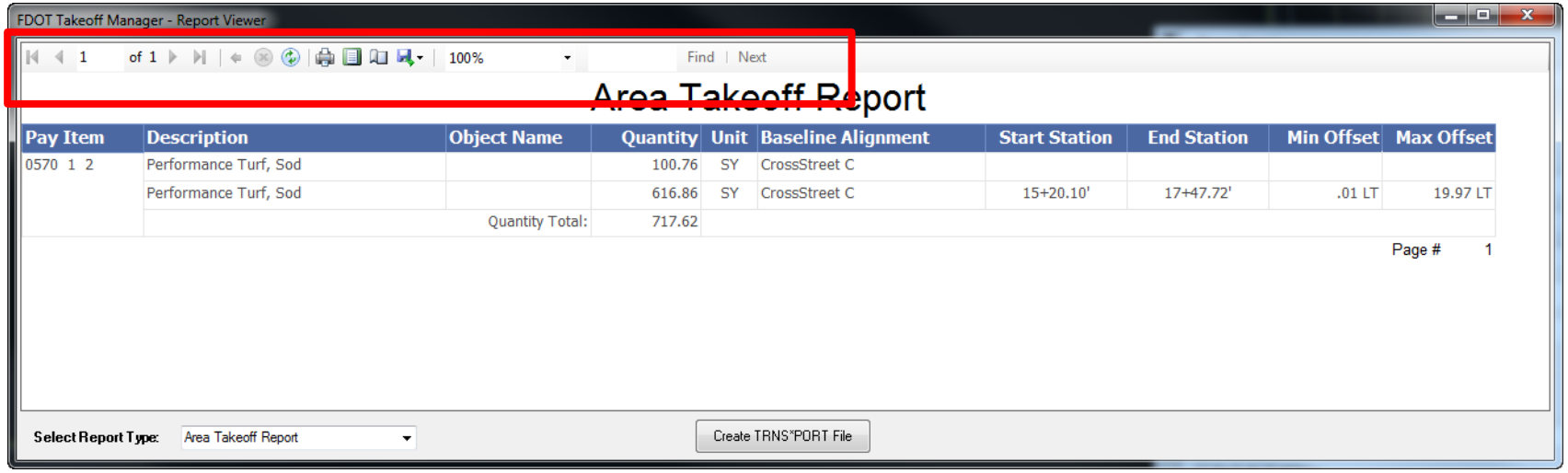
“Summary Tables” Tab

File Output Directory – Allows you to browse the calculations folder in your project where the reports should always go
Include Entity Manager Placed Items – Reports back only items found that were placed exclusively with EMX (Entity Manager)
Include Non-Alignment Associated Items – Reports back items that were placed using *“Pavement Markings” “FDOT Signs”* and *“Place Block Group”*
Include Drainage Items – Reports back Drainage parts (Structures & Pipes) also any other network items that use part families
Include Xref Files – When selected and you have Xref’s loaded in your current drawing file it will return all objects with pay items found in all Xref’s and current file
Output Upper Case – When selected the report will return in all upper case. If not selected it will return as entered
Create Corresponding CSV File(s) – In addition to creating an automated report you have an option to create a CSV (excel) file to format and add to other non automated tables
Open Output File(s) - When selected all reports will automatically open upon creation



Create Summary Tables starts the process with all options selected and all Summary Tables that are highlighted

"The Report Interface"



Before we take a look at the actual report lets look at the anatomy of the report viewer itself

Search Report for Keywords

Scroll Navigational buttons for Multi page reports

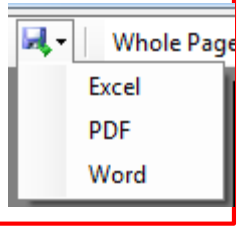
Refresh Report

Print Report

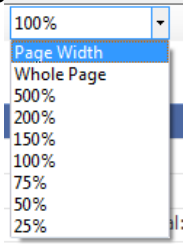
Print Preview

Page Setup

Save As Mode

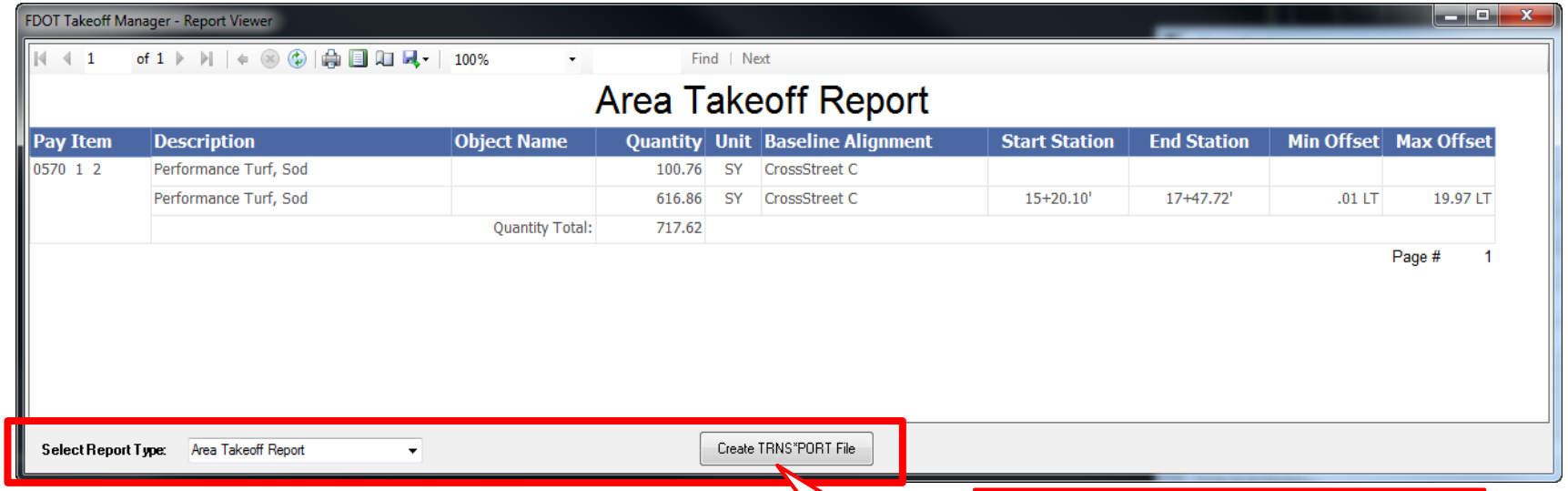


Quick Zoom Feature

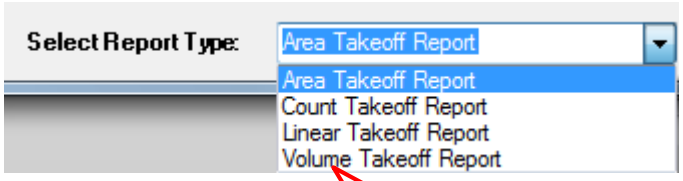


HINT- If you seem to be stuck in Layout or Preview mode click the same Icon again to exit that mode.

“The Report Interface”

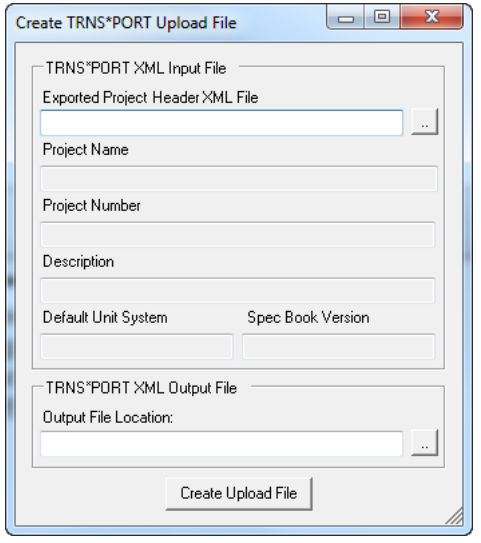


If you run a report and it comes up blank It may be due to the incorrect Report Type selected.

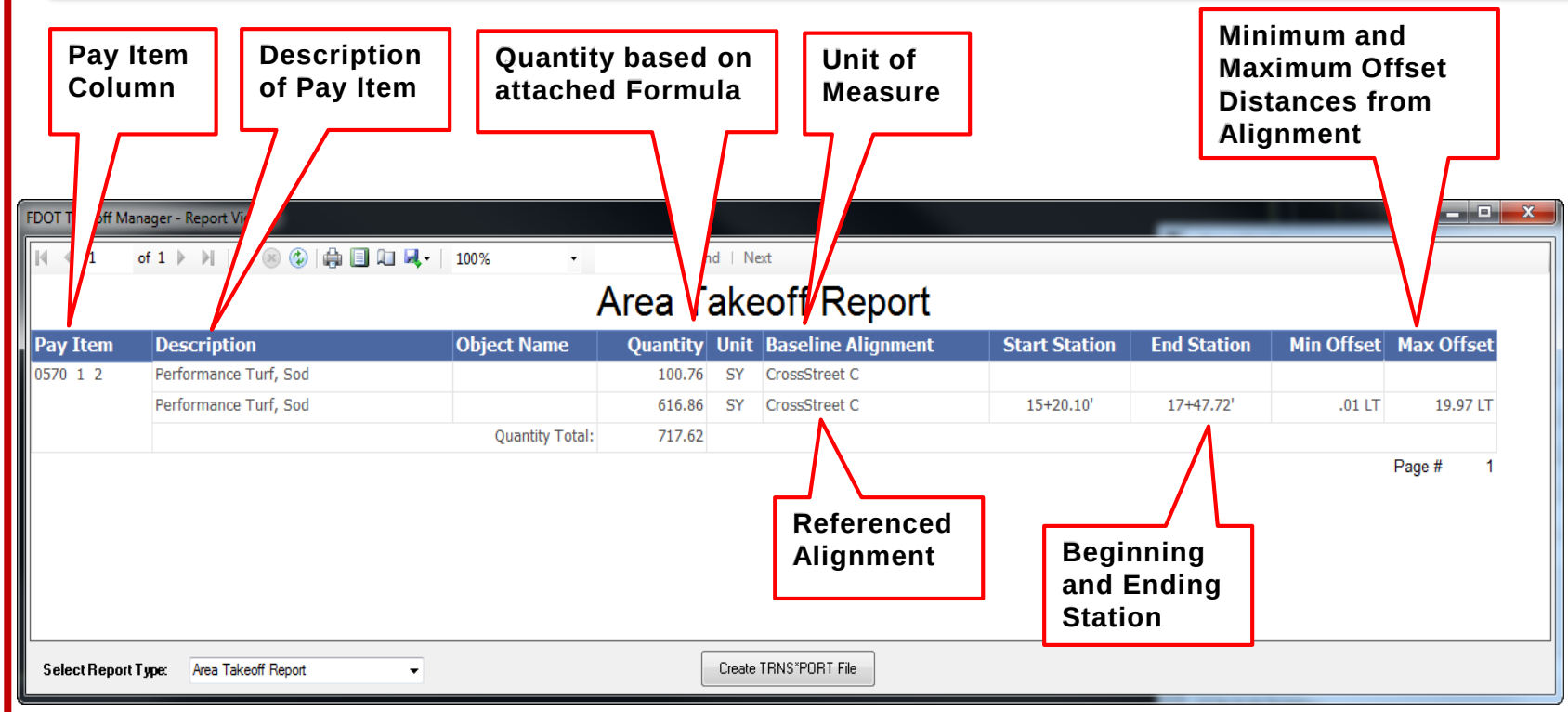


There are four Report Types to Choose from. Area, Count, Linear, & Volume. Each Pay Item has a formula attached that determines which Category it falls into.

TRANS*PORT Interface to Generate Reports



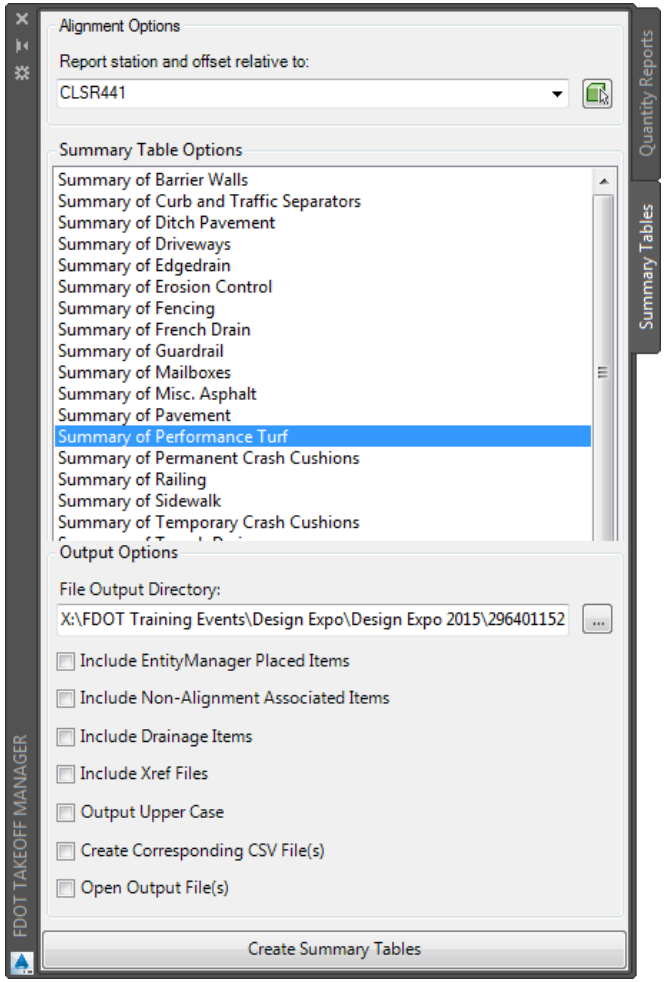
"The Report Interface"



In this example we have a Area report showing performance Turf, Sod using the "Quantity Reports" tab.

From here we can save it to a Excel, Word, or a PDF file for further editing.

“Summary Table Report”



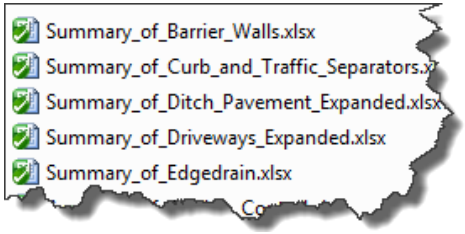
Let’s run the same report, but with the Automated Summary Tables. Do the following.

- Select an Alignment
- Select the desired Summary Table
- Designate the Output Directory for the file
- Select open Output File
- Click the Create Summary Tables button

Let’s look at what is happening behind the curtain.

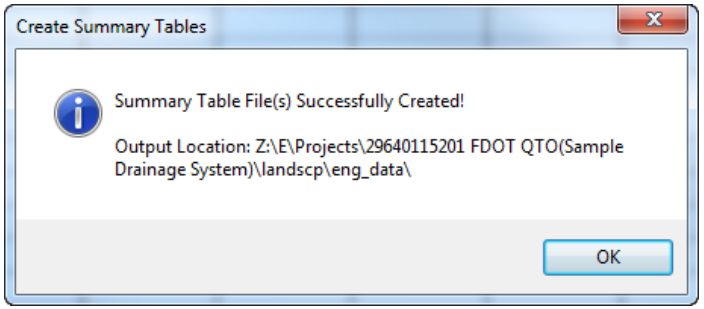
FDOT2015.C3D ▸ Data ▸ Templates ▸ XLSX ▸ Summary Reports

In your install directory there is a folder that contains all of the XLS files and corresponding XML files.



When you run the “Create Summary Tables” button the application finds the corresponding XML file to see what pay item numbers match, then it puts them into the correct column in the target Excel file.

"Automated Report"



Another friendly reminder tells you that the report creation was successful and then it opens in Excel

This is a truncated report, but you get the idea.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	SUMMARY OF PERFORMANCE TURF														
2	LOCATION			SIDE	AREA ID	LENGTH	WIDTH	PERFORMANCE TURF		PERFORMANCE TURF (SOD)		PREPARED SOIL LAYER		DESIGN NOTES	CONSTRUCTION REMARKS
3								0570 1 1		0570 1 2		0162 1 11			
4	STA. TO STA.							SY		SY		SY			
5								P	F	P	F	P	F		
6		to		RT	48A3					100.8					
7	15+20.10'	to	17+47.72'	LT/RT	4A5F					616.9					
8															
9															
10															
11															
12															
13															
14															
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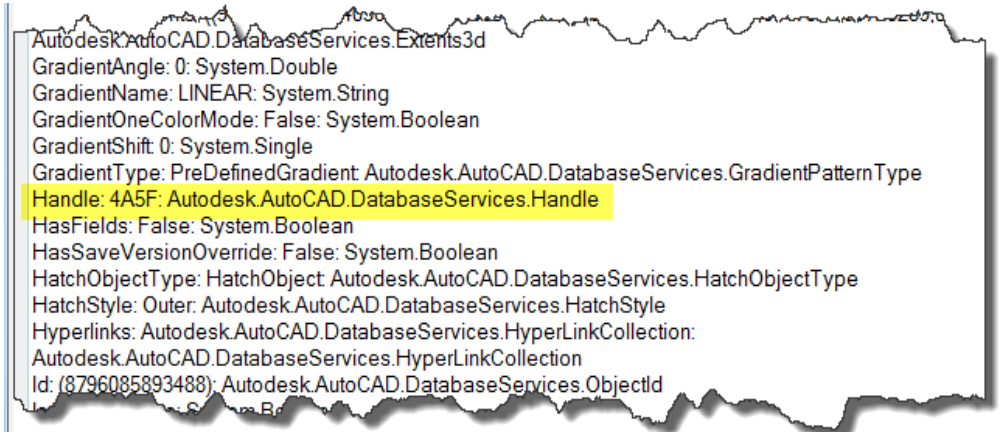
22															
23															
24															
25															
26															
27							SUB-TOTAL:			718					
28							TOTAL:			718					

“Automated Report”

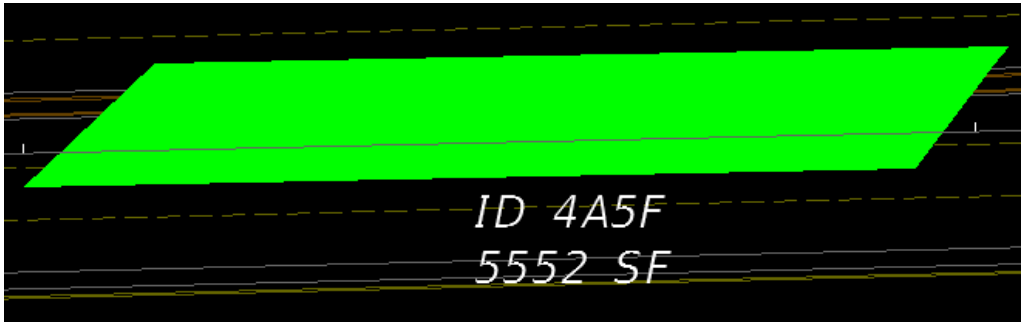
AREA ID	LEN
48A3	
4A5F	

What’s with that Area ID Info on my Report??

EVERY object that is drawn in AutoCAD has a unique handle assigned to it that never changes as long as that object isn’t deleted and re drawn.



HINT- To see a list of these neat things type in “SUPERLIST” on the command line.



Refer to my Handout on Entity Manager for more information regarding the application

"Linking Report"

Lets go over the options to bring in the "Summary of Fencing" Report. There are two different options to bring it in. They are listed in order of preferred method.

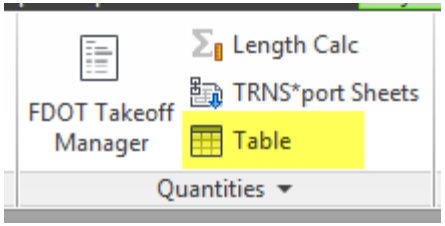
- **Option One- Link direct from Excel**
- **Option Two- Link the Excel Cells to a Pre-formatted AutoCAD Table**

SUMMARY OF FENCING

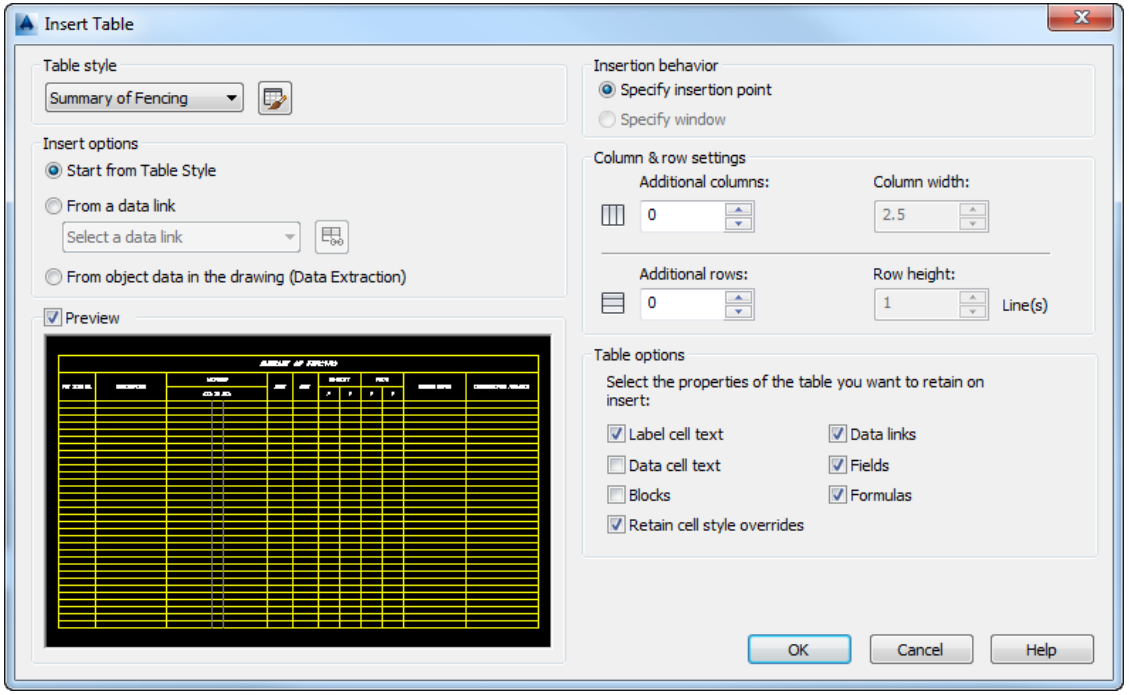
PAY ITEM NO.	DESCRIPTION	LOCATION STA. TO STA.			SIDE	UNIT	QUANT P
0550 10150	Fencing, Type A, 8.1- 10.0' Height, Standard	10+23.53'	to	17+50.25'	RT	LF	726.8
		20+09.66'	to	20+09.66'	LT		782.8

Let's do Option One first. Above you can see the Auto-populated Fencing summary as it appears in Excel.

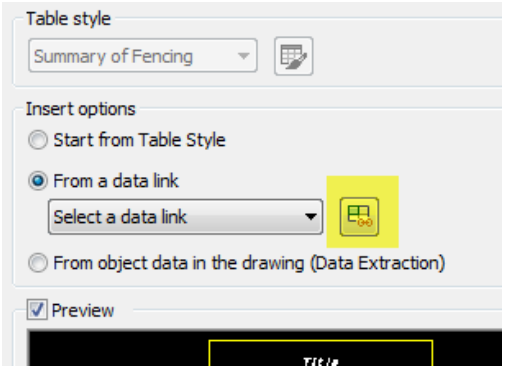
On the FDOT ribbon pick the Table Icon.

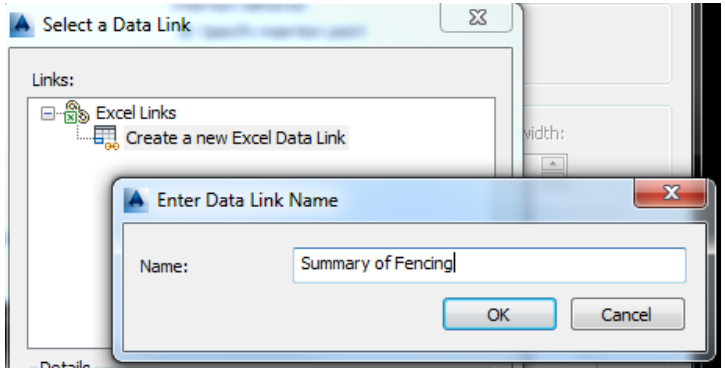


“Linking Report”



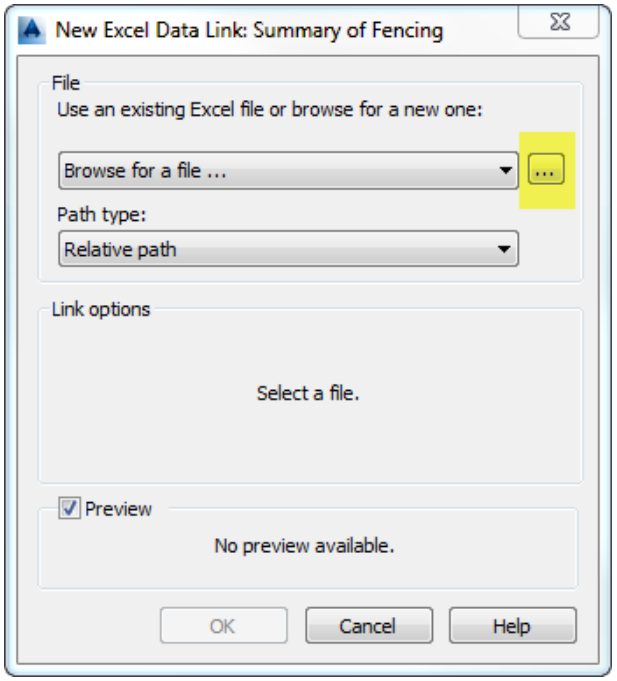
The Insert Table Dialog box opens. Since we want to do Option one select the “From a Data Link” and select the Data Link Manager icon that is highlighted below.



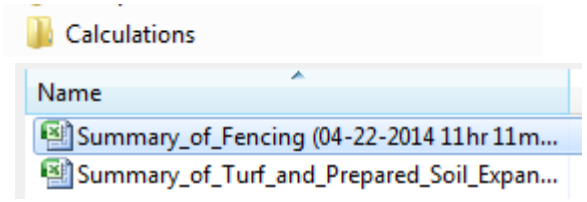


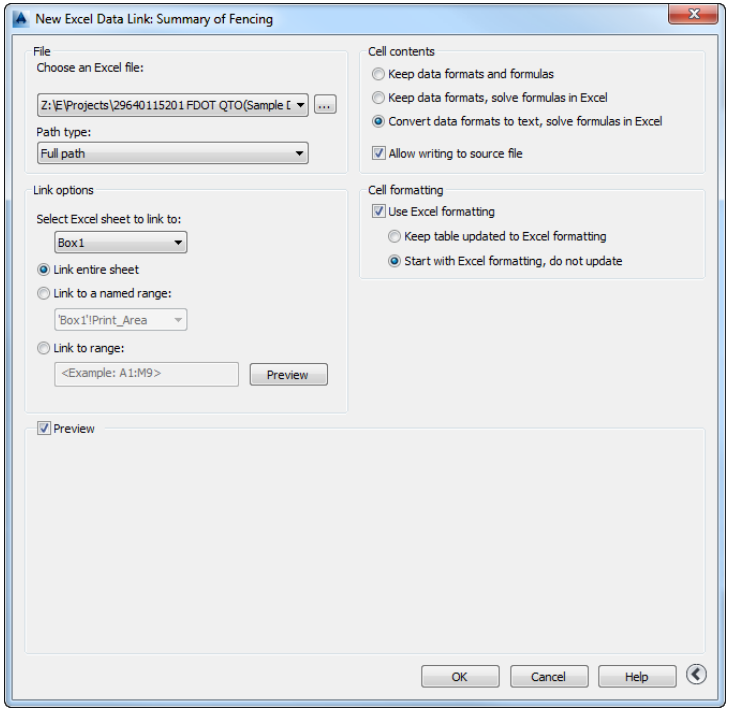
We want to create a new Data link so select “Create a new Excel Data Link” and name it appropriately.

“Linking Report”



Select the “Browse for a File” Ellipses button. Browse to the appropriate calculations folder within your project folder where you saved the initial Report





As you can see the dialog box fills in with the info you have selected.

At this point select OK.

“Linking Report”

SUMMARY OF FENCING								
LOCATION			SIDE	UNIT	QUANTITY		TOTAL	
STA. TO STA.					P	F	P	F
10+23.53'	to	17+50.25'	RT	LF	726.8		1510	

Upon first glance it needs a little adjustment to look correct.

Select the entire table. Be careful to select the border instead of inside a cell. Click in the Arrowhead Grip and move it in to fit inside your sheet border.

	C	D	E	F	G	H	I
SUMMARY OF FENCING							
LOCATION				SIDE	UNIT	QUANTITY	
STA. TO STA.						P	F
	10+23.53'	to	17+50.25'	RT	LF	726.8	
	20+09.66'	to	20+09.66'	LT		782.8	

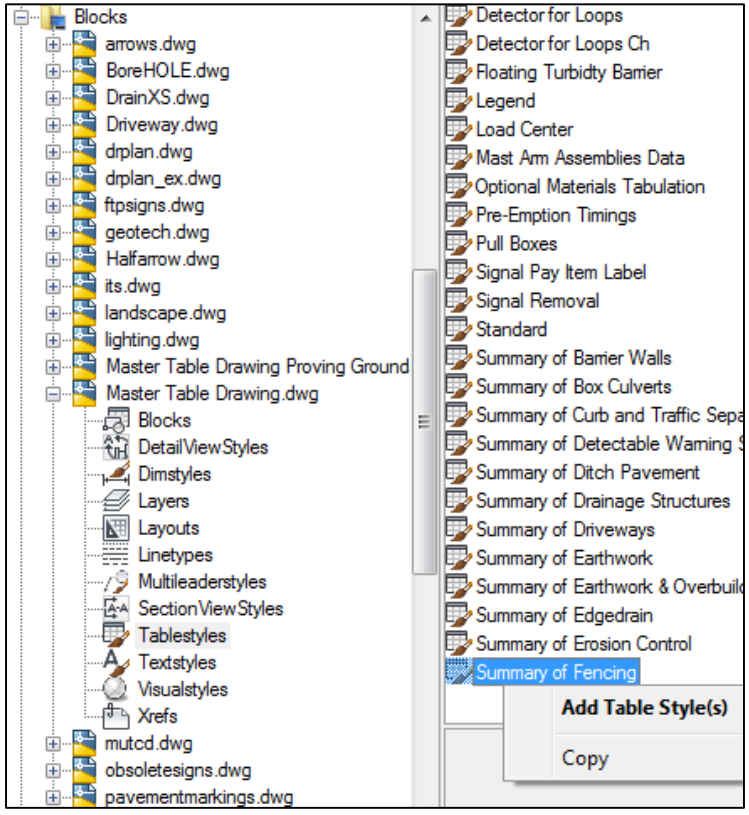
To fix the above image select inside of the cell to highlight it. Using the top or bottom square grip expand the cell so the text will shift to its correct placement.

	C	D	E	F	G	H	I	J	K
SUMMARY OF FENCING									
LOCATION				SIDE	UNIT	QUANTITY		TOTAL	
STA. TO STA.						P	F	P	F
	10+23.53'	to	17+50.25'	RT	LF	726.8		1510	
	20+09.66'	to	20+09.66'	LT		782.8			

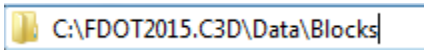
“Linking Report”

All of the Tables now reside in the fdotmaster template, which means when you create new files they will already be loaded.

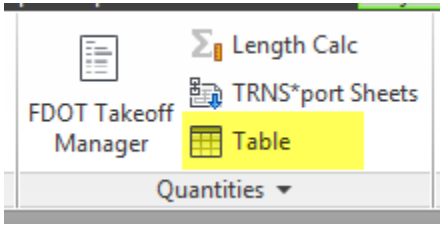
However In the event the AutoCAD Tables are not in your file do the following steps



To begin with lets make sure you have the proper Table in your Drawing. Type “DC” on the command line to launch “Design Center” Within Design Center browse to the Blocks folder in the State Kit install Directory

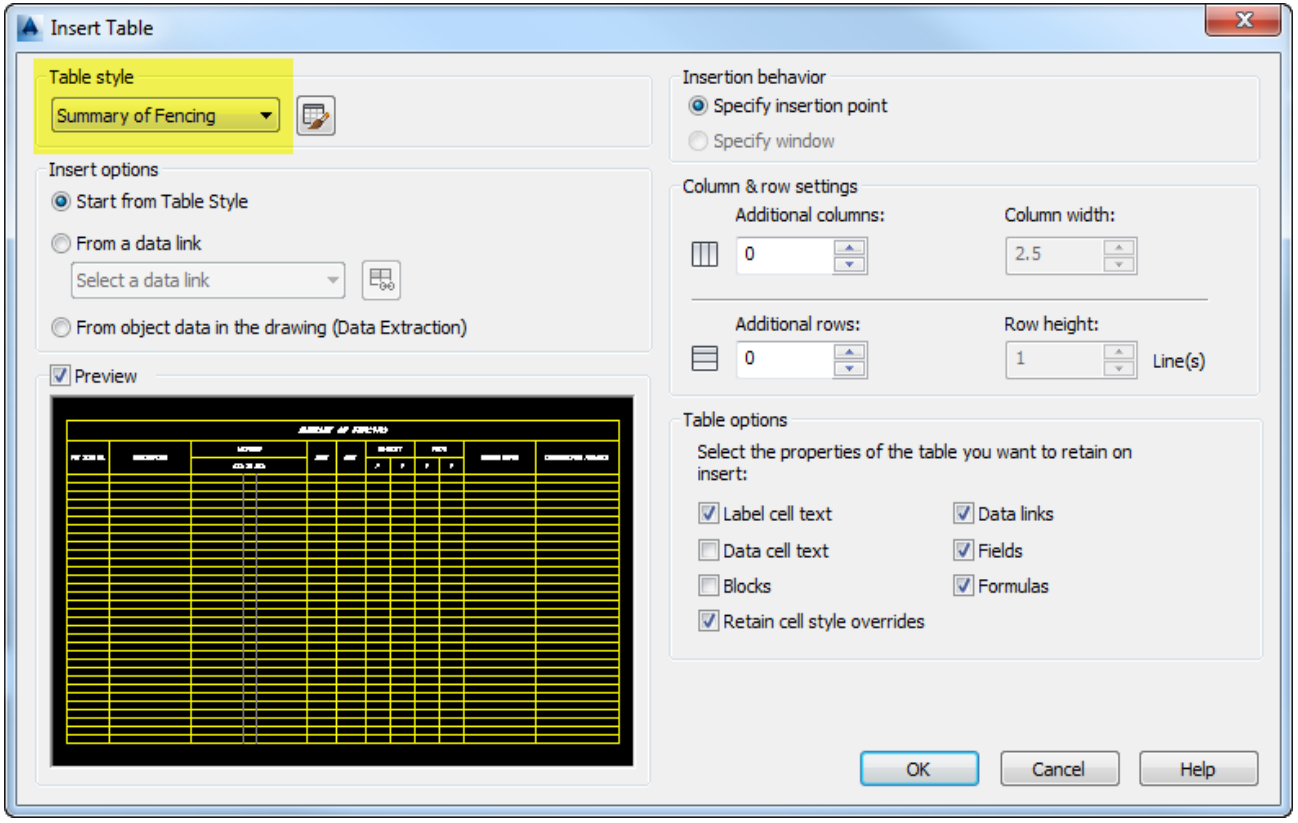


Expand the “Master Table Drawing” and select Tablestyles. Right click on the desired table name and select “Add Table Style”



Now you are ready. Select the “Table” Icon again.

“Linking Report”

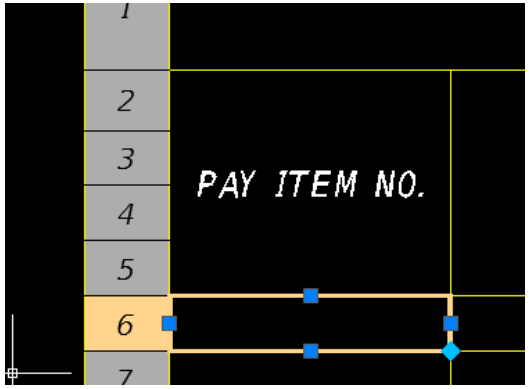


When the “Insert Table” dialog box comes up select the “Table Style” pull down to select the desired table in this case “Summary of Fencing”.

Make sure you match the selections in the lower right corner in the Table Options section.

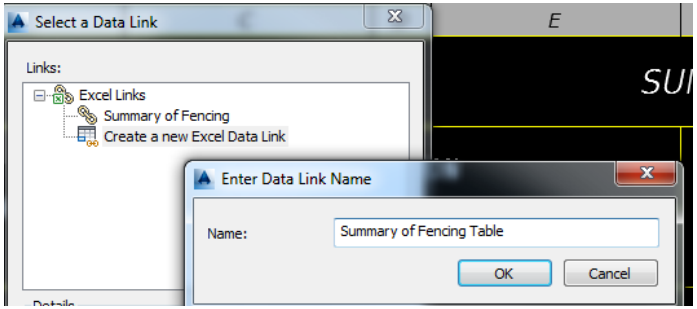
Select “OK”

"Linking Report"

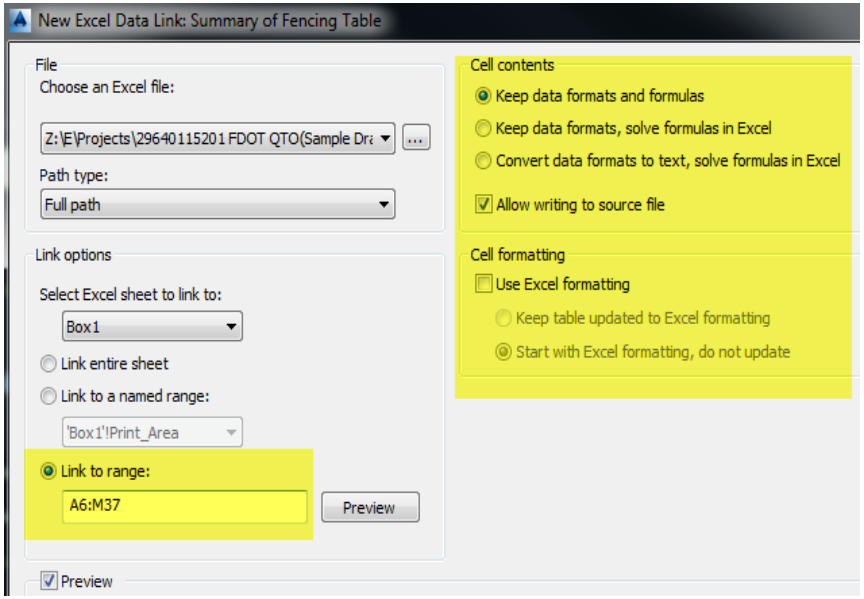


With Table now inserted select the first cell where data will go.

The Table Contextual ribbon appears. Select "Link Cell"

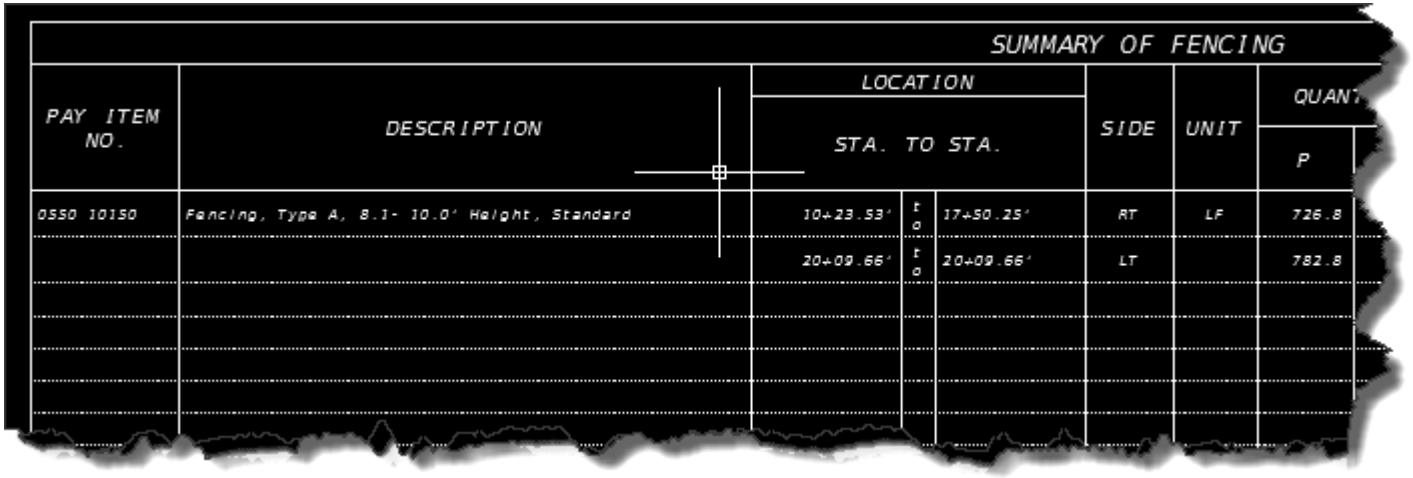


Create a new Excel Data Link. Browse to the report location as before then Select the "Link To Range" It is important to pick the exact Range in the Excel file so it will match the Table.



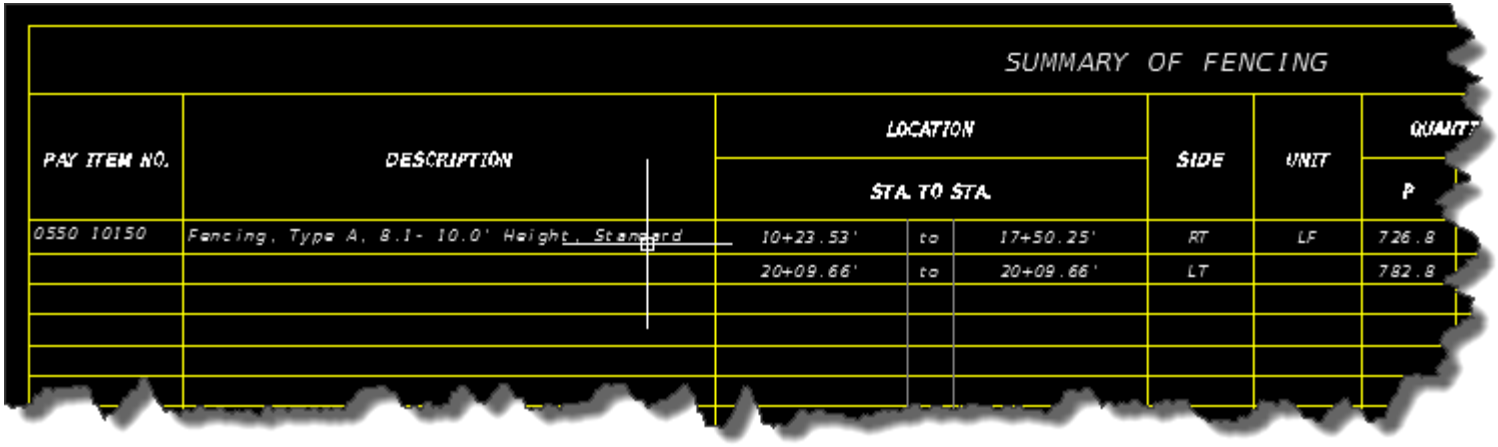
Don't pick the column headers, just where the data begins (Ex. From above A6)

“Linking Report”



SUMMARY OF FENCING

PAY ITEM NO.	DESCRIPTION	LOCATION STA. TO STA.			SIDE	UNIT	QUANT P
0550 10150	Fencing, Type A, 8.1- 10.0' Height, Standard	10+23.53'	to	17+50.25'	RT	LF	726.8
		20+09.66'	to	20+09.66'	LT		782.8



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PAY ITEM NO.	DESCRIPTION	LOCATION STA. TO STA.			SIDE	UNIT	QUANT P
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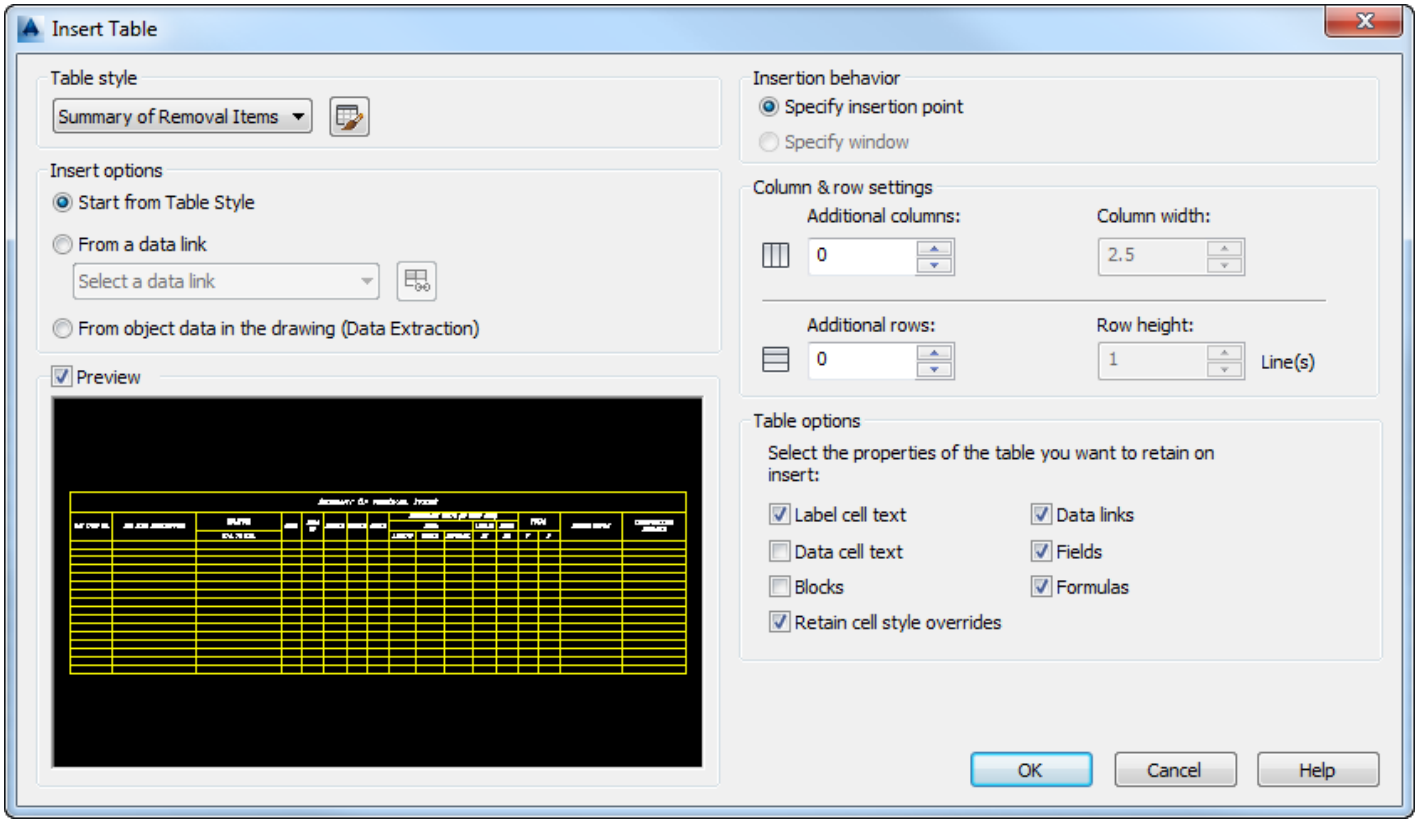
		20+09.66'	to	20+09.66'	LT		782.8

As you can see the visual differences are minimal between the two options. You can still edit the cells in both as far as size goes. Depending on the table you use you can also break the link in the AutoCAD Table option and manually enter data and formulas if you need a quick edit.

"Part Two"

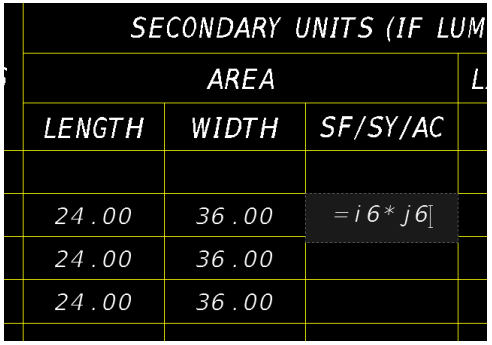
"Miscellaneous Edits"

“Editing a Table”



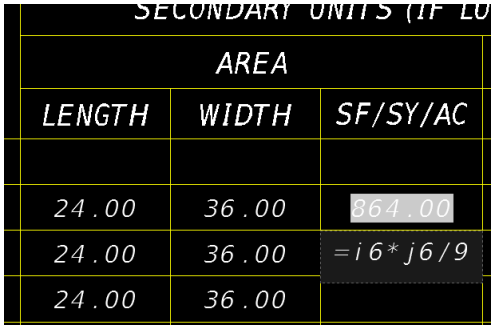
Click on the “Table” Icon and insert the “Summary of Removal Items” make sure you are in Paper Space in your current Tab.

“Editing a Table”

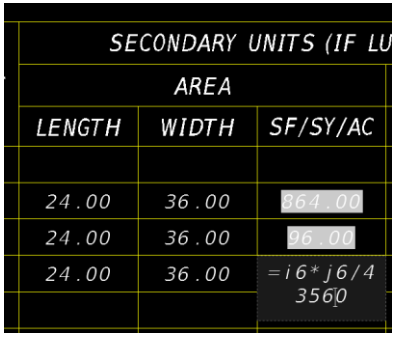


Adding a Formula

You can type a formula in a cell like Excel. In this example we are adding a Square Footage formula.

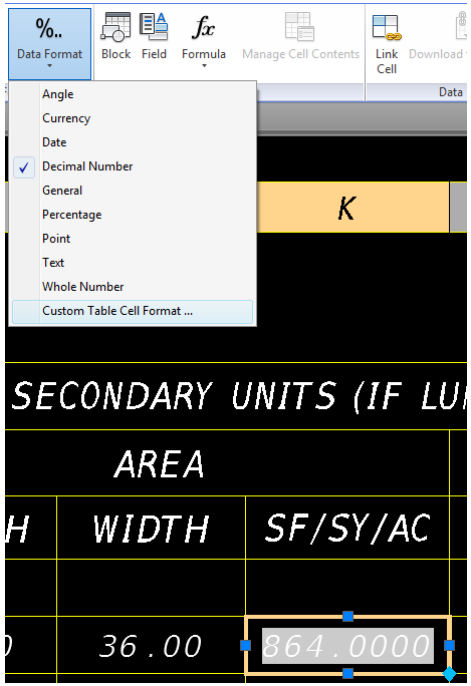


In this example we are typing a Square Yardage formula.

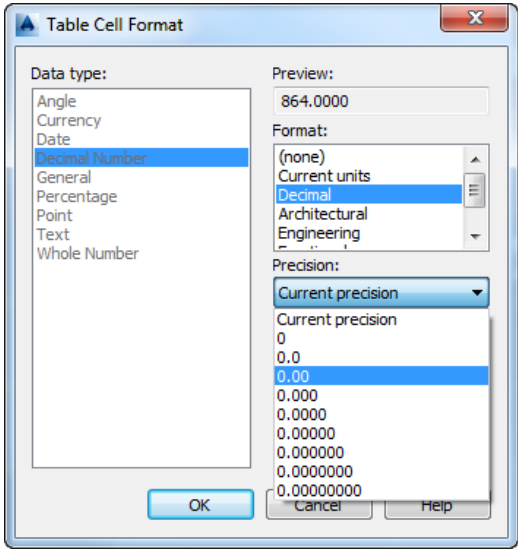


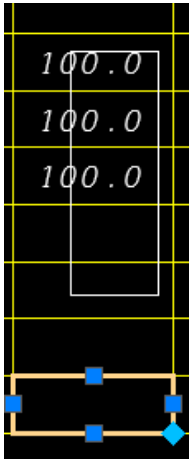
In this example we are typing a Acreage formula.

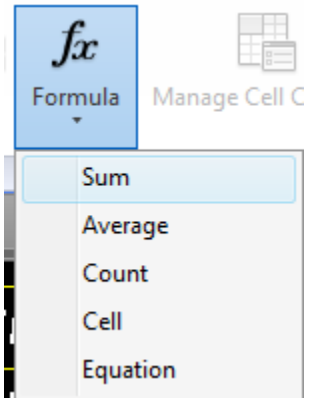
“Editing a Table”

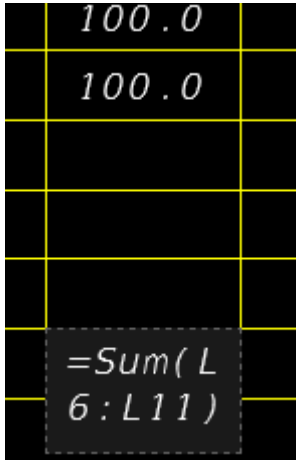


You can change the precision by selecting the “Data Format” > “Decimal Number” > “Custom Table Cell Format”







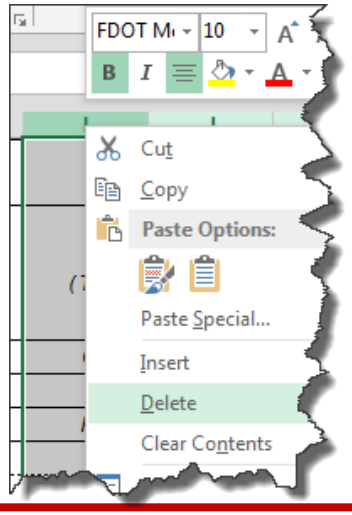


To add a “SUM” Equation to your table select the Target Cell. On the ribbon select SUM on the Formula Pull-down. Left click your mouse in the top of your cell range it will go into a window feature and then left click on the bottom of your cell range. You should see the formula populate your target cell at this point. Press Enter to complete the process

“Editing an Excel File”

The below example is of the Summary of Guardrail report. It contains numerous columns that will not fit in a typical FDOT 11x17 sheet. The reason is due to each column containing every Pay Item scenario using guardrail. After running the report you will need to delete the unused columns.

LOCATION			SIDE	GUARDRAIL (W-BEAM)		GUARDRAIL (W-BEAM DOUBLE FACE)		GUARDRAIL (THRIE BEAM)		GUARDRAIL (THRIE BEAM DOUBLE FACE)		GUARDRAIL (MODIFIED THRIE BEAM)		GUAR (INSTALL
STA. TO STA.				0536 1 1		0536 1 3		0536 1 5		0536 1 9		0536 1 11		0536
				LF		LF		LF		LF		LF		
				P	F	P	F	P	F	P	F	P	F	P
10+62.37'	to	16+60.80'	LT	598.4										
10+79.00'	to	16+30.37'	RT	551.4										



Select the columns in Excel >Right Click and select Delete. You will need to do these steps on several of the tables in Excel before you bring them into your drawing.