FDOT C3D Updates, Tips, & Tricks
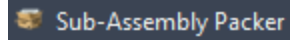
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What will be covered

- FDOT State Kit Updates, Tips, & Tricks
- Civil 3D Updates, Tips, & Tricks

FDOT State Kit Updates
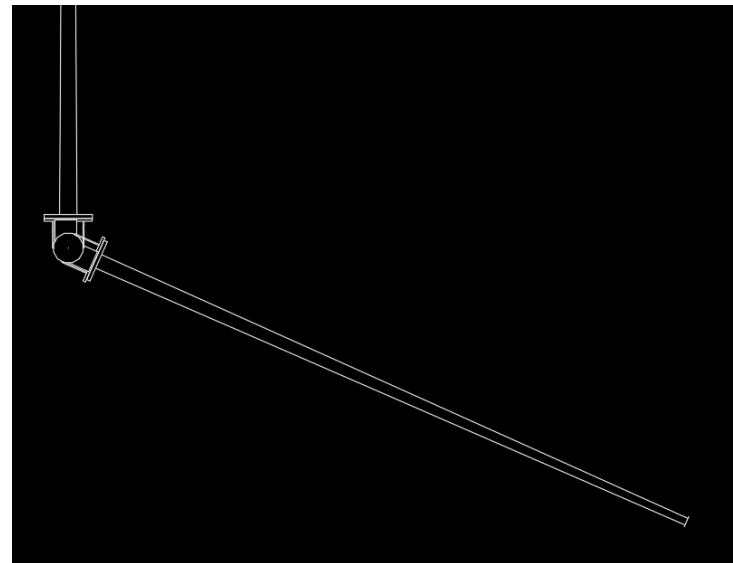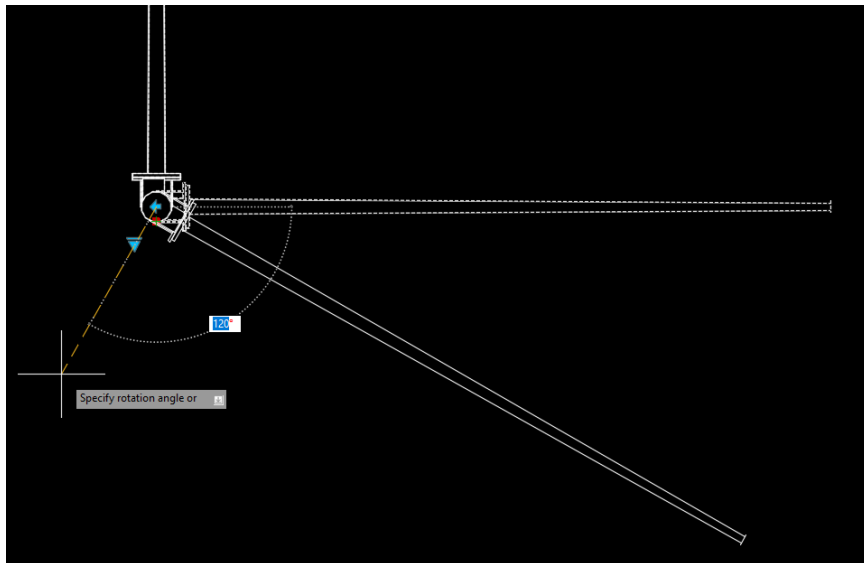
Sub-Assembly Packer

Sub-Assembly Packer

The Sub-Assembly Packer allows you to archive the custom sub assemblies used in the corridor model so that if needed they could be reloaded into a current drawing, that is because Sub-Assemblies do not travel with projects.

Scenario; You have a created or modified a sub assembly in an older project using an older version of civil 3d and it would be nice to have that particular sub assembly for the new project.
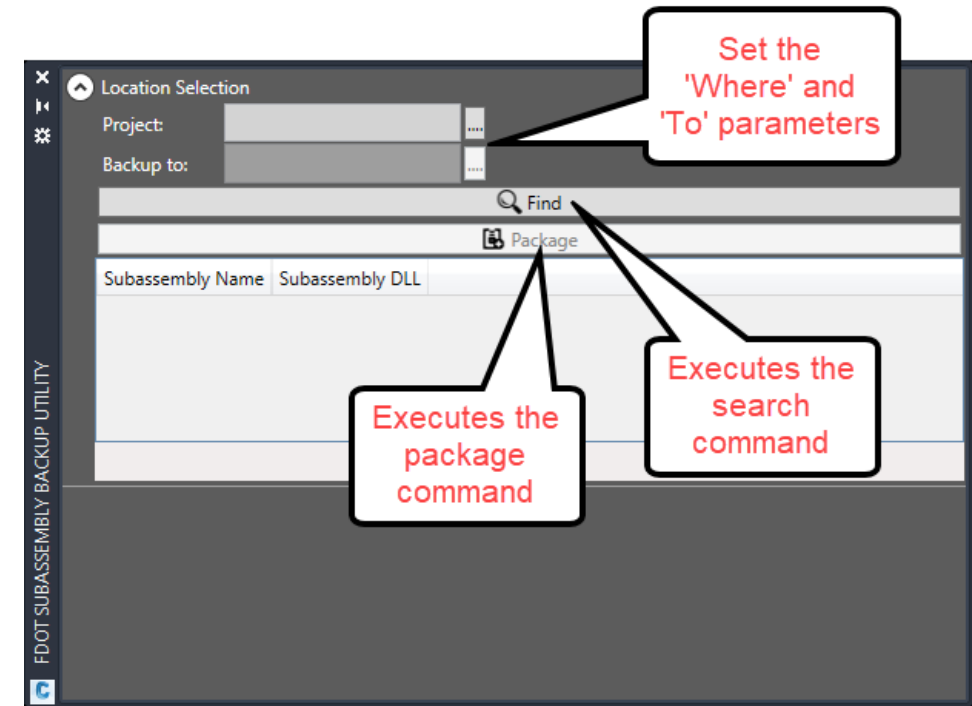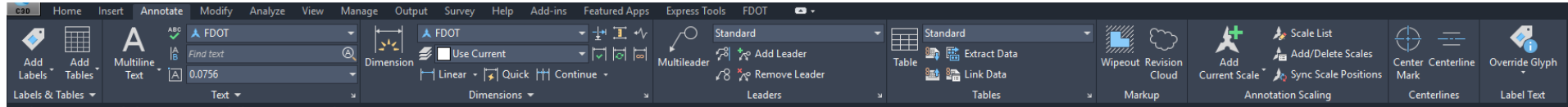
Mast Arm Assemblies

A Rotation parameter was added to all mast arm assemblies, which allows the designer to rotate an arm so that it isn't 90 degrees to the other one. An example is shown below.
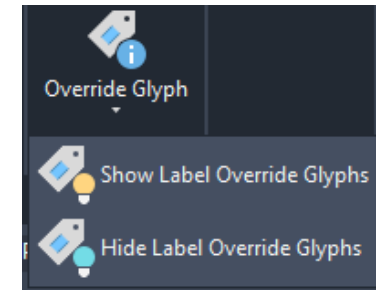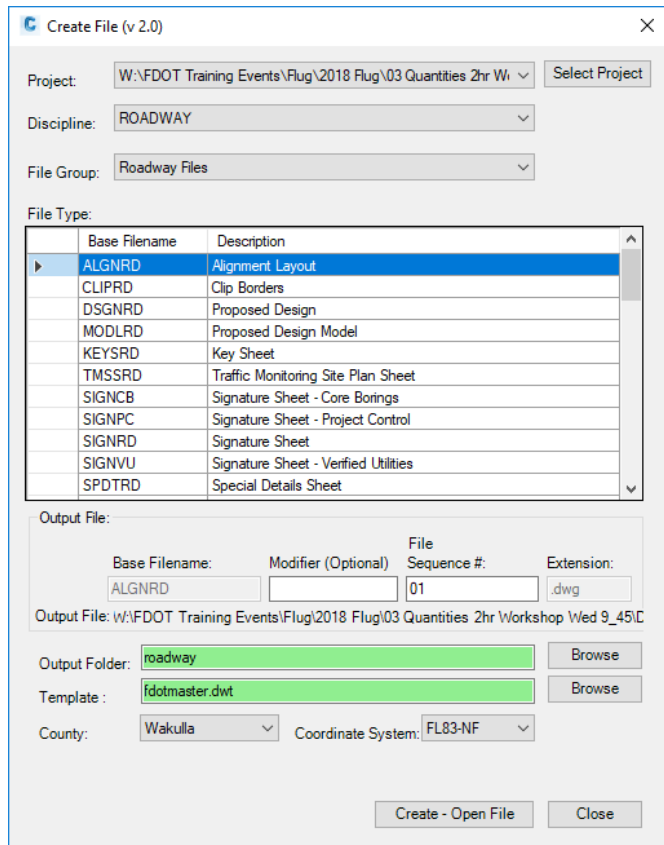
Override Glyph Control for Labels

On the Annotate ribbon is the control to hide the warning glyphs that modified labels display. This is particularly annoying when working with signing and pavement marking plans. The issue arises when a civil 3d label style's content has been changed.

Create File Application

The create file app now reads a standards database xml file included with the state kit instead of reading the old master standards spreadsheet. This new process is also used in the SS4 and new ORD software.

Entity Manager – Unit Definitions
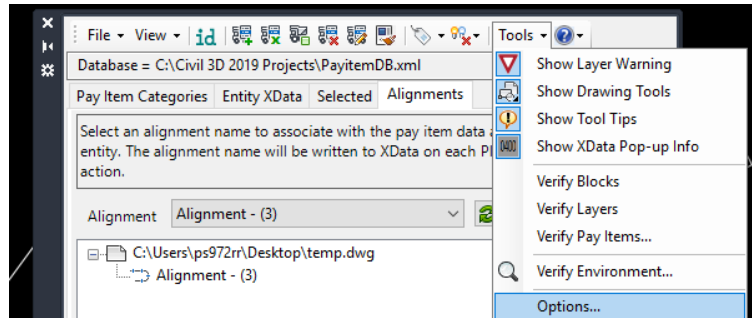
Have you ever been working with EMX and wanted to know what some of the abbreviations meant or how some items were counted?

In EMX under the Tools pulldown you can select Options, which opens the Application Options dialog box. Click on the Unit Definitions tab and all of your questions now have answers.

Application Options

User Settings | Category Selection | Application Settings | Unit Definitions

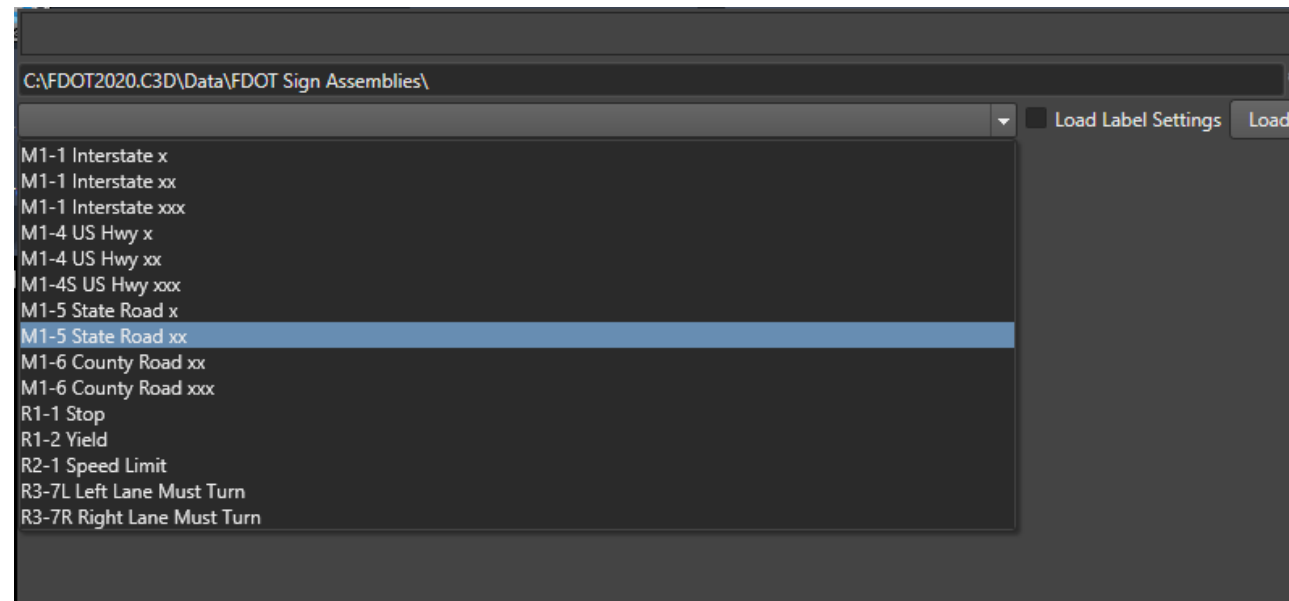| Name	Label	Parameters	Description	Expression	Unit	Type
AC	AC		Acre	element_area/43560	AREA	double
AS	AS		Assembly	element_count	EACH	integer
CF	CF	thickness	Cubic Feet (thickness=thickness in feet)	element_area*thickness	AREA	double
CFE	CF	volume	Cubic Feet (volume=volume in feet)	element_count*volume	EACH	double
CY	CY	thickness	Cubic Yards (t=thickness in feet))	element_area*thickness/27	AREA	double
CYE	CY	volume	Cubic Yards (volume=volume in cubic yards, EA*v)	element_count*volume	EACH	double
EA	EA		Each (count)	element_count	EACH	integer
GA	GA	rate:layers	Gallons (rate=rate in Gallons per square yards, laye...	element_area*rate*layers/9	AREA	double
GA2	GA	thickness:psi:percent:pga	Gallons (t=thickness in inches, psi=lbs/sq.in., pga=...	element_area*thickness*psi*percent/pga/9	AREA	double
GM	GM		Gross Miles (LF/5280)	element_length/5280	LINEAR	double
GM2	GM		Gross Miles (LF/5280)	element_length/5280	LINEAR	double
LF	LF		Linear Feet	element_length	LINEAR	double
NM	NM		Net Miles (LF/5280)	element_length/5280	LINEAR	double
PM	PM		Per Miles (LF/5280)	element_length/5280	LINEAR	double
PI	PI		Per Intersection	element_count	EACH	integer
PL	PL		Plant	element_count	EACH	integer
LB	LB	lbs	Pounds (lbs=pounds per acre)	element_area*1/43560	AREA	double
SF	SF		Square Feet	element_area	AREA	double
SF2	SF	width	Square Feet (width=width in feet, LF*w)	element_length*width	LINEAR	double
SFE	SF	area	Square Feet (area=area in square feet, EA*a)	element_count*area	EACH	double
SY	SY		Square Yards	element_area/9	AREA	double
SY2	SY	width	Square Yards (width=width in feet, LF*w)	element_length*width/9	LINEAR	double
SYE	SY	area	Square Yards (area=area in square yard, EA*a)	element_count*area	EACH	double
SYV	SY	avgheight	Square Yards (avgheight= average height of wall i...	element_length*avgheight/9	LINEAR	double
MG	MG	rate:layers	Thousand Gallons (rate=rate in gallons per square ...	element_area*rate*layers/9/1000	AREA	double
TN	TN	thickness:weight	Tonnage (thickness=thickness in inches, weight=...	element_area*thickness*weight/9/2000	AREA	double
STA	STA	increment	Station Increment (LF/increment)	element_length/increment	LINEAR	double
GC	PL	p:r	Number of Plants for Ground Cover (p = plant spac...	element_area/(p*r)	AREA	double
LFSS	LF	st:sk	Linear Feet for Skip Striping (st=stripe length in feet...	element_length	LINEAR	double
LF_Incr	EA	increment	Increment (LF/increment)*increment	element_length/increment	LINEAR	double
CM	CM		Centimeters	element_length*100	LINEAR	double
M3	M3	thickness	Cubic Meters (thickness= thickness in meters)	element_area*thickness	AREA	double

Unit definitions are an embedded resource. Use configuration variable UnitDefinitionFile to specify alternative.
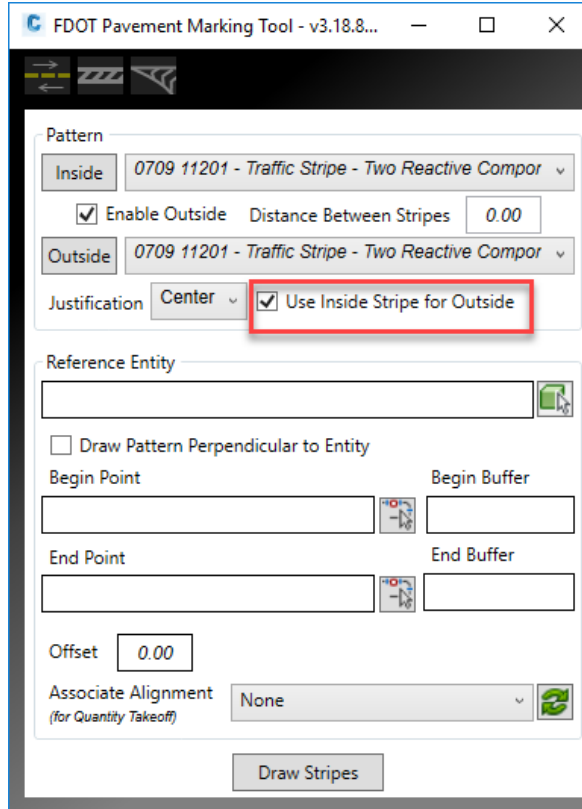
OK | Cancel

FDOT Signs – Delivered Sign Assemblies

Did you know when the State Kit was installed it also installed some pre built sign assemblies that are ready to go? Located in the data folder within the state kit install there is a FDOT Sign Assemblies folder that contain common signs as shown below. When opened the information populates the form saving you clicks. You can also edit the assembly if needed.

FDOT Pavement Marking Tool

There is a new option in the pavement marking tool that allows the outside pattern to match the inside pattern. This saves time because before you had to browse for both patterns independently.

FDOT Takeoff Manager – Quantities by Sheet
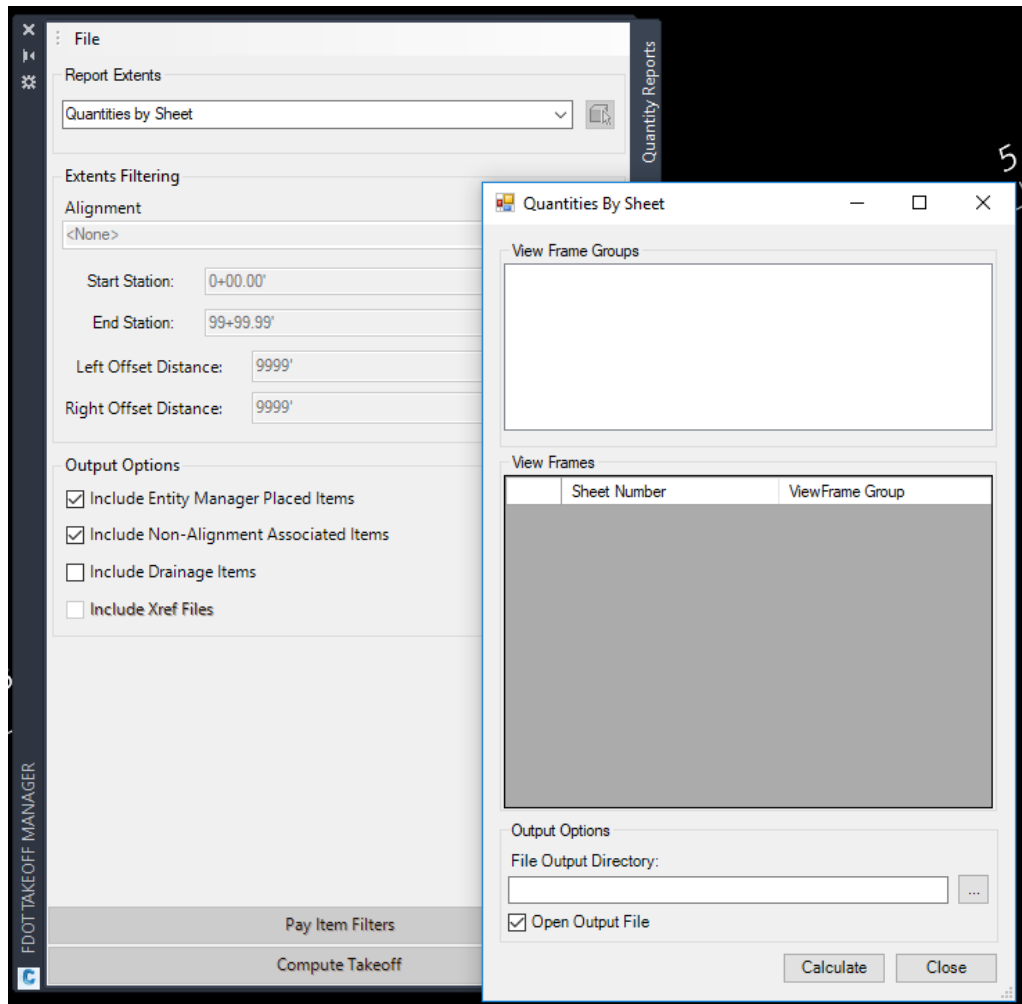
Inside FDOT Takeoff Manager is an option to run multiple sheets to calculate traffic plan quantities. You must have view frame groups present, either in the source design file or data referenced. You can run multiple alignments and view frame groups at once. When the application is finished running a formatted spreadsheet opens with the corresponding sheet numbers and all of the quantities present.

Summary of Drainage Structures Report
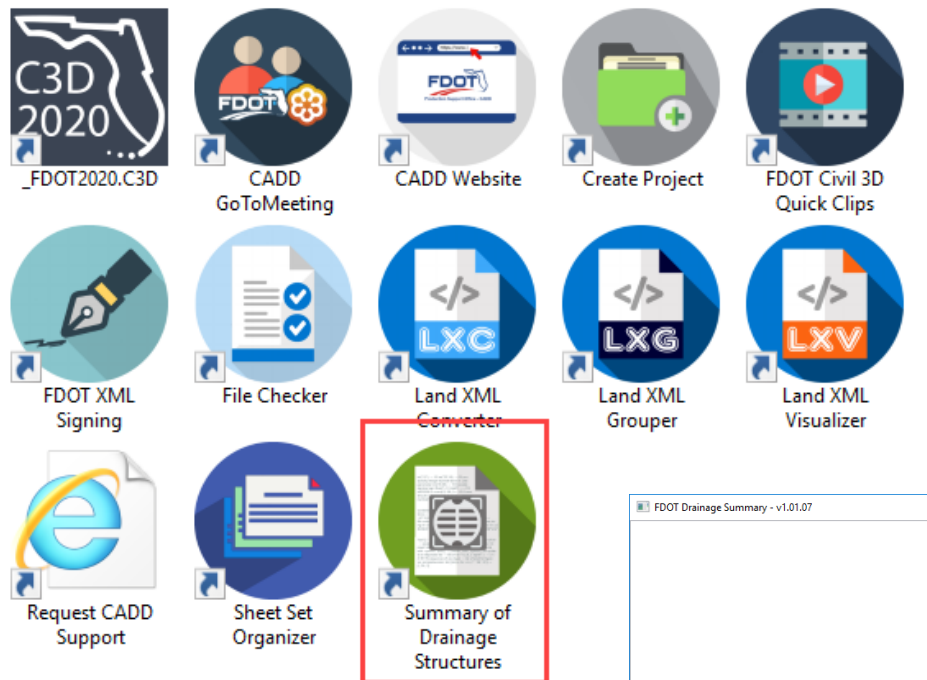
Inside the install folder on your desktop is the Summary of Drainage Structures application that will read one or multiple drainage files and report back and fill in the appropriate information in the formatted summary of drainage structures spreadsheet. The report will need minor modifications before linking to your design files.
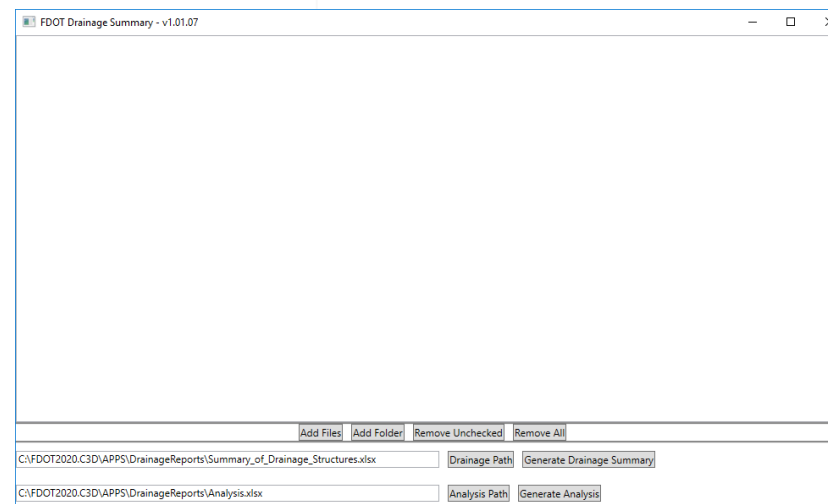
Civil 3D Updates

Purge Redesign

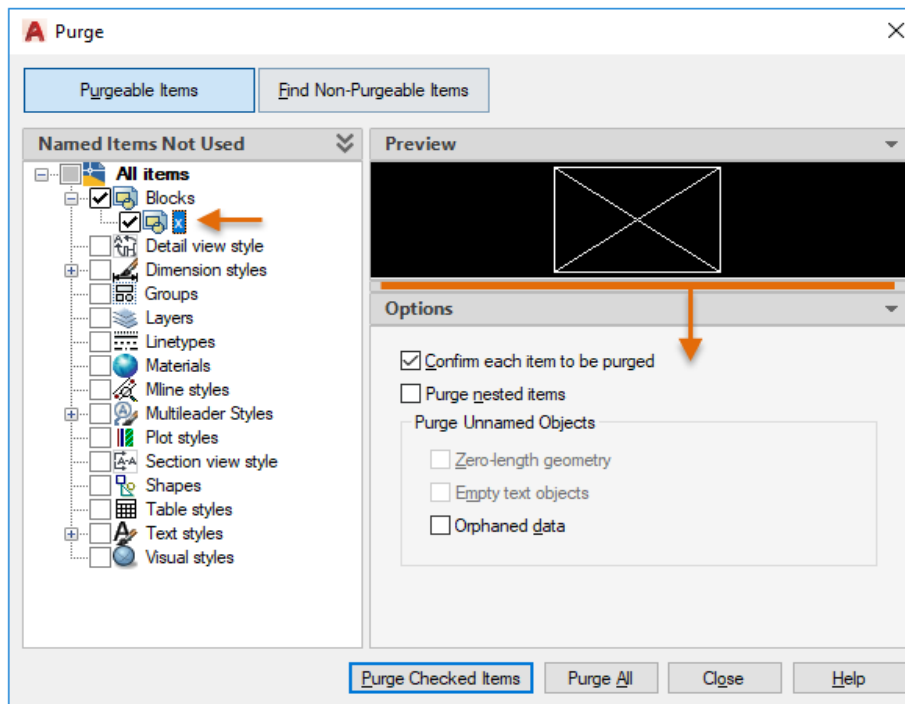The Purge feature has been revised for easier drawing cleanup and organization. The control options are nearly the same, but the orientation is more efficient and the Preview area is now resizable.

- Notice that you can now purge zero-length geometry without purging empty text objects.

- Check boxes in the Named Items Not Used panel provide a way to select purgeable items by *category* as well as individual items.

- The Find Non-Purgeable Items button displays information specific to why the checked item cannot be purged, which will be helpful in many cases.

- For objects that can't be purged, the new design provides enhanced information as shown below, including the number of objects on each layer and their impact on file size. The Select Objects button shown in the illustration below, zooms in on the specified objects that can't be purged.
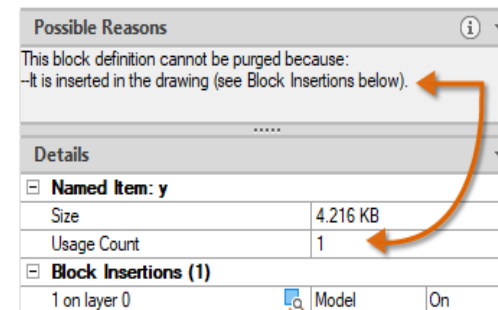
Analyze Gravity Drainage Network

You can use the updated analyze gravity network command to analyze a pipe network and apply the results to the pipe network.

The updated command uses a modeless dialog box so you can leave it open while you do other work.
You can use this command to perform the following analysis types:

- **Resize Pipes and Reset Inverts**: Analyzes the flow through the pipes, and then resizes the pipes and resets inverts to accommodate the flow.
- **Compute Energy and Hydraulic Grade Lines**: Calculates the energy and hydraulic grade lines, and reports whether each line in the system is in a normal state, surcharged, or flooded.
- **Inlet Analysis**: Analyzes the capacity of the inlets and reports the flow, depth, and spread at each inlet.

- Autodesk Storm and Sanitary Analysis has been updated with the following features:
  - Tailwater conditions can be set separately for each storm while running multiple storm events.
  - The Peak Rate Factor for a dimensionless hydrograph can be set for each subbasin.
  - New and updated storage chambers from Advanced Drainage Systems® (ADS) and CULTEC® are available.

- Use new structure feature settings to specify default values that can be used by the Analyze Gravity Network command.

DWG Compare Enhancements

The primary enhancement to the DWG Compare feature is that you can now directly compare and edit the current drawing together with a specified drawing while in the compare state. The comparison takes place in the current drawing. Any changes you make in either the current drawing or the compared drawing are dynamically compared and highlighted.

To facilitate direct editing in the compare state, the options and controls for this feature were moved from the ribbon to a docked toolbar at the top of the drawing area. Most of the options were combined into the Settings control and enhanced as shown. You can easily toggle the comparison from the toolbar and the display of the types of differences from the Settings control.

Also, the default colors can easily be changed by clicking on a color for your preferences or for colorblind-friendly colors. In this illustration, the color for Not in Current Drawing was changed from red to yellow.
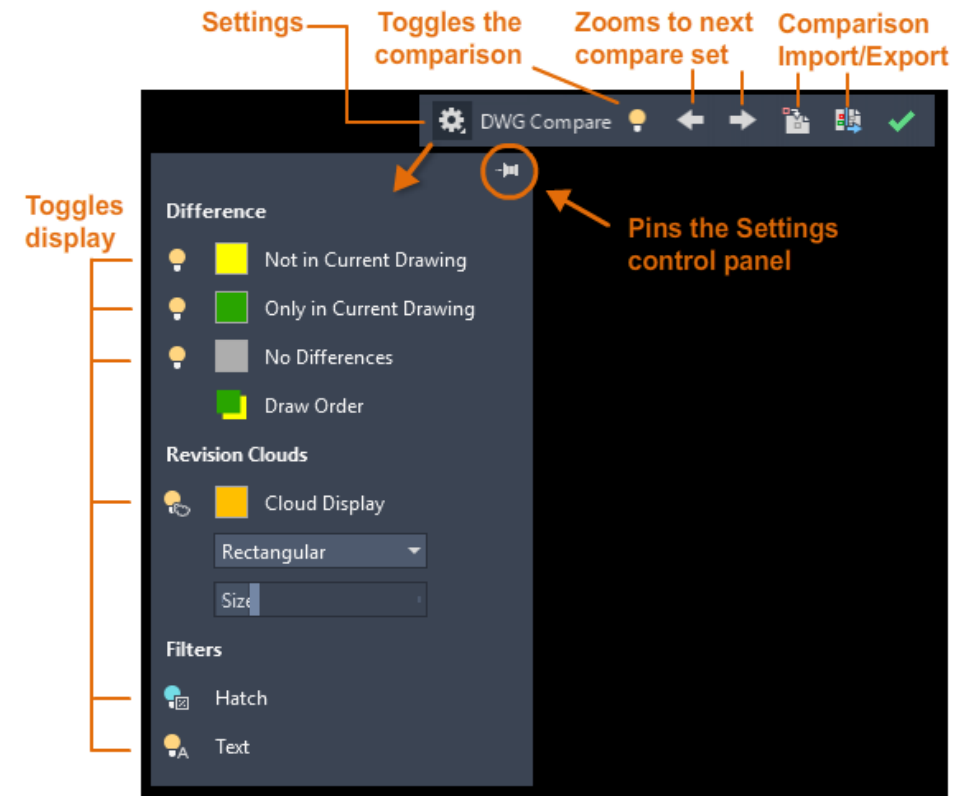
For example, let's say you need to compare the differences
between two highly complex drawings that have been simplified
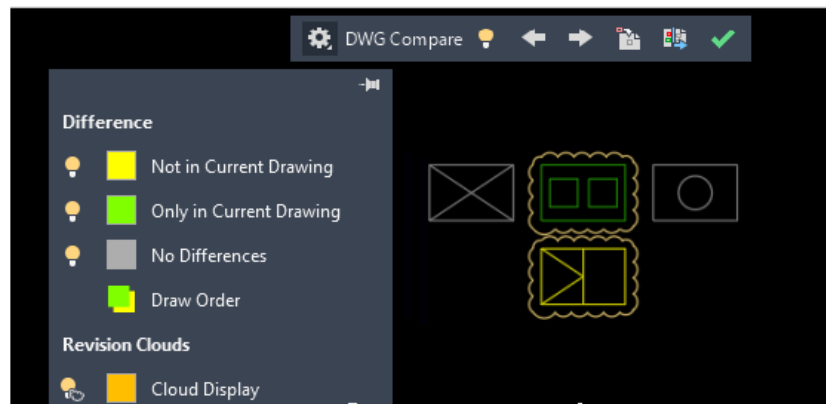to look like the following:

Current drawing
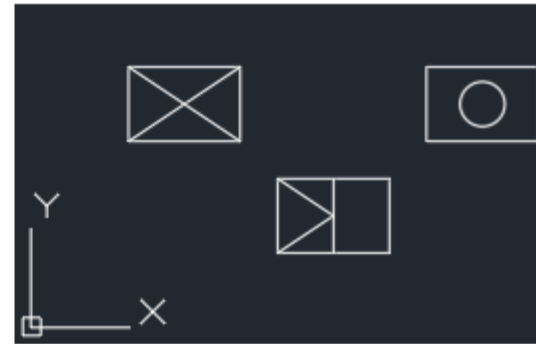
Compared drawing

The result of comparing the *current* drawing with the *compared* drawing looks like this:

The change sets are each surrounded by orange revision clouds, which are scaled to the drawing extents.

- You can import the highlighted differences in yellow from the compared drawing into the current drawing. If you do so, these objects will now exist in both drawings and will automatically turn gray. Only the objects in the specified area that are *not* in the current drawing can be imported.

- You can also export both drawings into a new *snapshot drawing* that combines the similarities and changes between both drawings. The result of this operation is the same as a drawing comparison in AutoCAD 2019.

- The arrow buttons provide a way to step through each change set, automatically zooming in to each successive or previous change set.

Export Civil 3D Drawings

The Export Civil 3D drawing command has been updated with the following features;

• Labels with background masks are no longer exported with bowtie-shaped hatches

• Xrefs are exploded appropriately on export

• Proxy state messages are no longer displayed on export

• The option to convert feature lines, parcel segments, and survey figures to 2d or 3d polylines
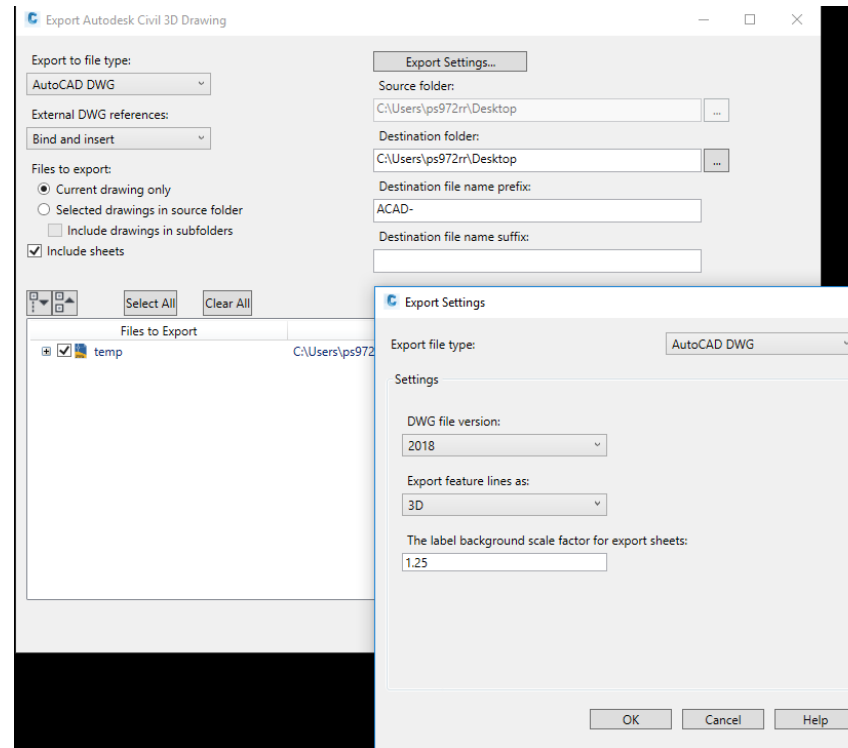
Survey Database in C3D 2020

The survey database format has been updated from Microsoft SQL Server Compact (SQL CE) format to SQLite. To use existing survey databases with Autodesk Civil 3D 2020, they must be converted to SQLite.

Use the Autodesk Civil 3D Survey Database Migration Utility to convert survey databases from SQL CE to SQLite.
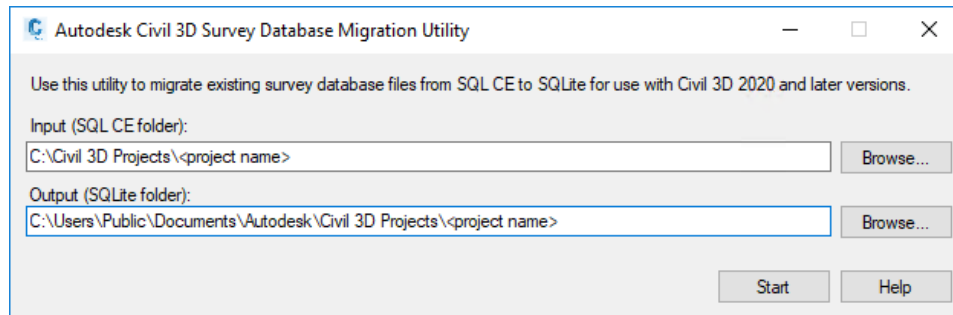
Important: Migrated databases are not compatible with earlier releases of Autodesk Civil 3D.
For more information about using this utility, see To Update a Survey Database.

https://www.autodesk.com/civil3d-survey-database-migration-utility

Blocks Palette

Several methods for inserting blocks are currently available: Insert, Tool Palettes and Design Center. Having these different options available recognizes that people in different disciplines have different requirements and preferences.

The primary reason for redesigning the Insert dialog box is to provide better visual previews of blocks in the workflow for inserting blocks. The palette increases efficiency for finding and inserting multiple blocks-including the new Repeat Placement option, which can save you a step.

Key features in the new Blocks palette facilitate specifying and inserting blocks efficiently from a most recently used list or from specified drawings. Three tabs provide access to the following:

- The Current Drawing tab displays all the block definitions in the current drawing either as icons or as a list.
- The Recent tab displays all the most recently inserted blocks regardless of the current drawing. These persist between drawings and sessions. You can remove a block from this tab by right clicking it and choosing Remove from Recent List.
- The Other Drawing tab provides a way of navigating to folders from which you can choose drawings either to insert as blocks or to choose from the blocks defined in those drawings. These drawings and blocks also persist between drawings and sessions.
- The top of the palette includes several controls, including a field for applying wildcard filters to the block names, and several options for different thumbnail sizes and list styles.

New and Changed Commands
BLOCKSPALETTE - Opens the Blocks palette.
BLOCKSPALETTECLOSE - Closes the Blocks Palette.
CLASSICINSERT - Opens the classic Insert dialog box.
INSERT - Starts the BLOCKSPALETTE command except in scripts, which open the legacy INSERT command for script compatibility.
-INSERT - Starts the command line version of the classic INSERT command.
**New System Variables**
BLOCKMRULIST - Controls the number of blocks displayed in the Recent tab of the Blocks palette.
BLOCKNAVIGATE - Controls the file and blocks that are displayed in the Other Drawing tab of the Blocks palette. Takes effect the next time you start the program.
BLOCKREDEFINEMODE - Controls whether the "Block- Redefine Block" task dialog box is displayed when inserting a block from the Blocks palette with the same name as a block inside the current drawing.
BLOCKSTATE (Read only) - Reports whether the Blocks palette is open or closed.
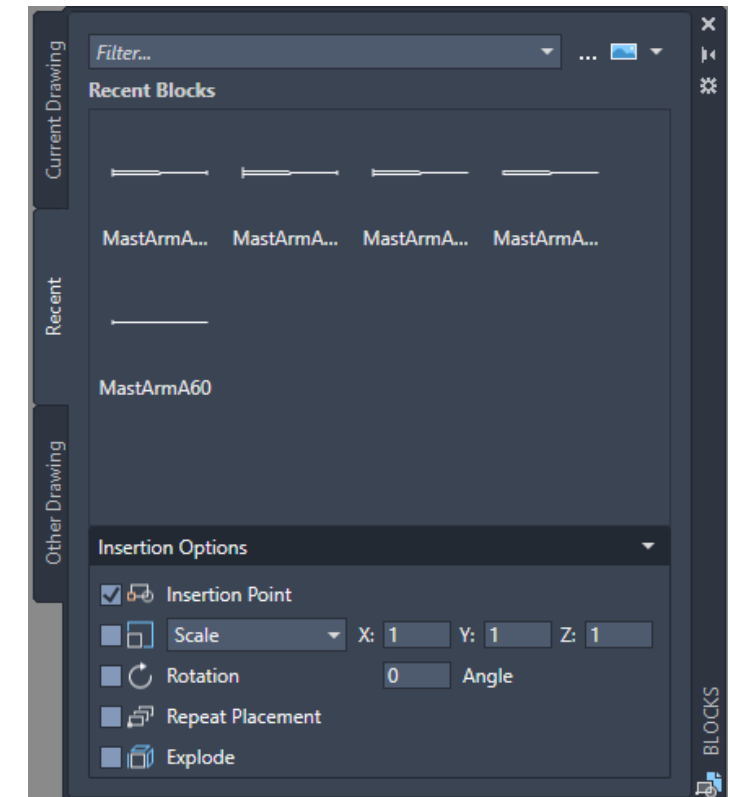
Measure Geometry Option: Quick Measure

Measuring has become much faster with the new Quick option of the MEASUREGEOM command. With this option, you can quickly review the dimensions, distances, and angles within a 2D drawing.

When this option is active, the command displays dimensions, distances, and angles within a 2D drawing dynamically as you move your mouse over and between objects. The orange squares displayed at the left side of the illustration represent angles at precisely 90 degrees.
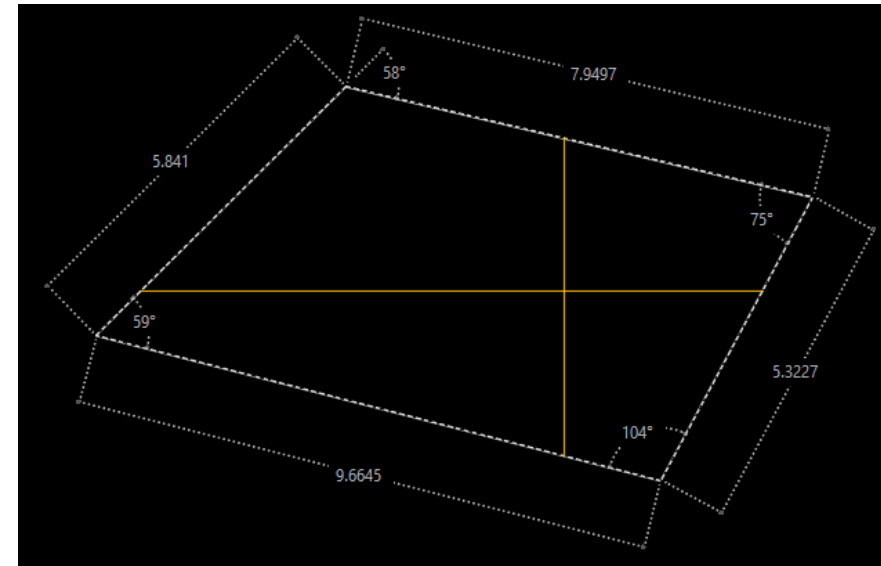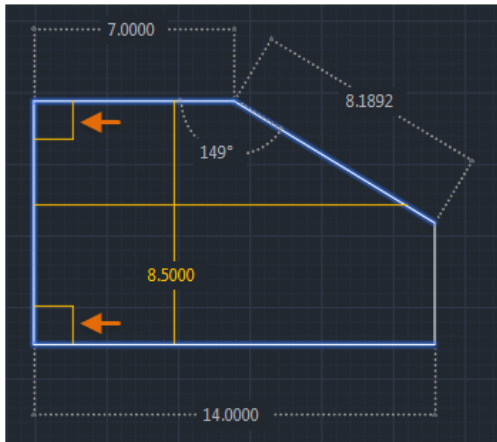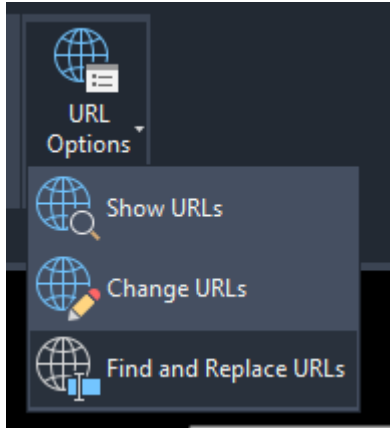

The distance between the two objects is measured in the illustration below because they're parallel.
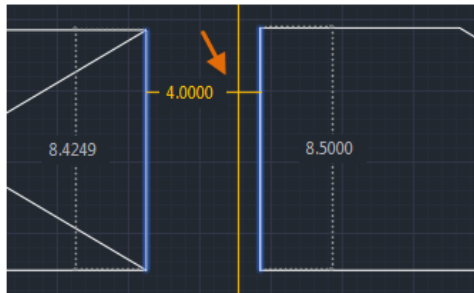
Additional URL Options

Located on the Express Ribbon is URL Option pulldown with useful tools.

❑ Show URLs – Shows all of the URLs that are in the current drawing
❑ Change URLs – allows the user to make quick edits on the address
❑ Find and Replace URLs – like a regular text editor find and replace, this allows you to quickly change multiple addresses at once.

Blocks – Find and Replace
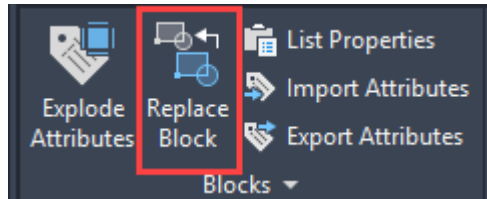
On the Express Ribbon in the Blocks panel is a command called Replace Block, it works just like a find and replace in a text editor. You can replace single or multiple blocks with a new block in your design file.