

Filtering a Survey Database

AutoCAD Civil 3D 2015

Introduction

No matter which processing application was used filtering data contained within a survey database has always been a cumbersome, tedious experience for me. I was often required to create a temporary list, with the only way of storing or visualising this data independently of the rest of the survey database being to duplicate it in a separate model. This in my eyes is a fatal flaw. Every time I duplicate the data I am creating a silo that operates independently of the project adding a web of complexity that need not exist. There is no link replicating changes made to the data between these two models making it very easy for changes to be lost in translation.

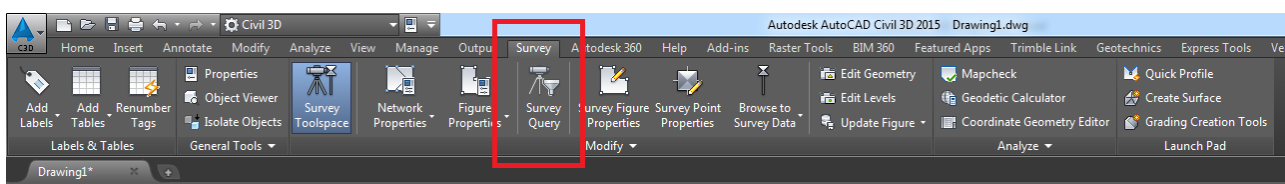
I've previously documented how good Civil 3D is at keeping one set of central data that is guaranteed to be current. Autodesk's offering for the efficient management of survey data comes in the form of the Survey Query, it fixes all of the flaws I've found in other surveying packages and makes the entire process much more intuitive.

About the Survey Query

Survey Queries allow us to filter information held within a survey database before inserting the filtered data into a drawing. This keeps the size of our models down by only inserting elements of the survey that are required. Survey Queries are stored within the Survey Database though can be exported to the .qml format for import into other survey databases.

Survey Queries are created and managed from a contextual ribbon menu that can be opened by clicking on the *Survey Query* icon on the *Survey* tab of the ribbon as shown in fig. 1 below.

Fig. 1

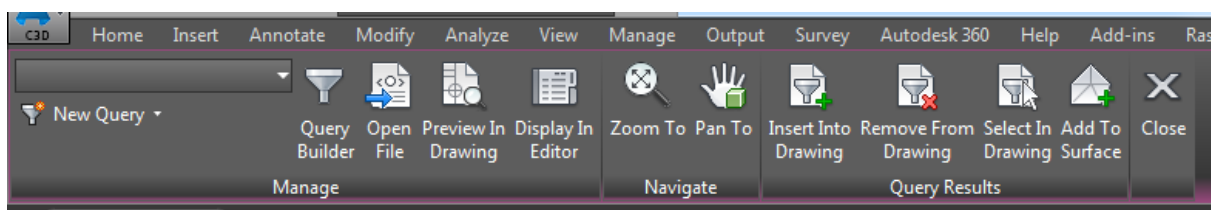


The Survey Query contextual ribbon menu shown in fig. 2 below, contains all of the management functions we require to utilise Survey Queries. The functions available to us are as follows:

- The drop down box on the left of the ribbon allows you to select from queries stored in the current survey database.
- The *New Query* drop down button allows you to create, copy and delete queries stored in the current survey database.
- *Query Builder* opens the query builder for the currently selected query.
- *Open File* allows you to import queries into the survey database from a .qml file.
- *Preview in Drawing* temporarily displays the data identified by the current query in the drawing.

- *Display in Editor* displays the data identified by the current query in the panorama window.
- *Zoom To & Pan To* allow you to zoom or pan the drawing to the data identified by the current query.
- *Insert Into Drawing* will insert the data identified by the current query into the drawing.
- *Remove From Drawing* will remove the data identified by the current query from the drawing.
- *Select In Drawing* will select the data identified by the current query in the drawing.
- *Add To Surface* allows you to add the data identified by the current query to a surface in the drawing, you also have the option to create a surface on the resulting dialog box.
- *Close* closes the Survey Query contextual ribbon.

Fig. 2



Creating a Survey Query

The first step after opening the Survey Query contextual ribbon is to click the *New Query* dropdown button and select *New Query*. You will be presented with the *Query Builder* dialog box as shown in fig. 3 below. I am looking to create a query that will import only the surface defining features of the survey into my drawing, as such the next step is to give the query an appropriate name, I've called mine Surface Defining Features. As you can see queries differentiate between points and figures, providing the user with a more heavily customisable experience than rival products I have experience with.

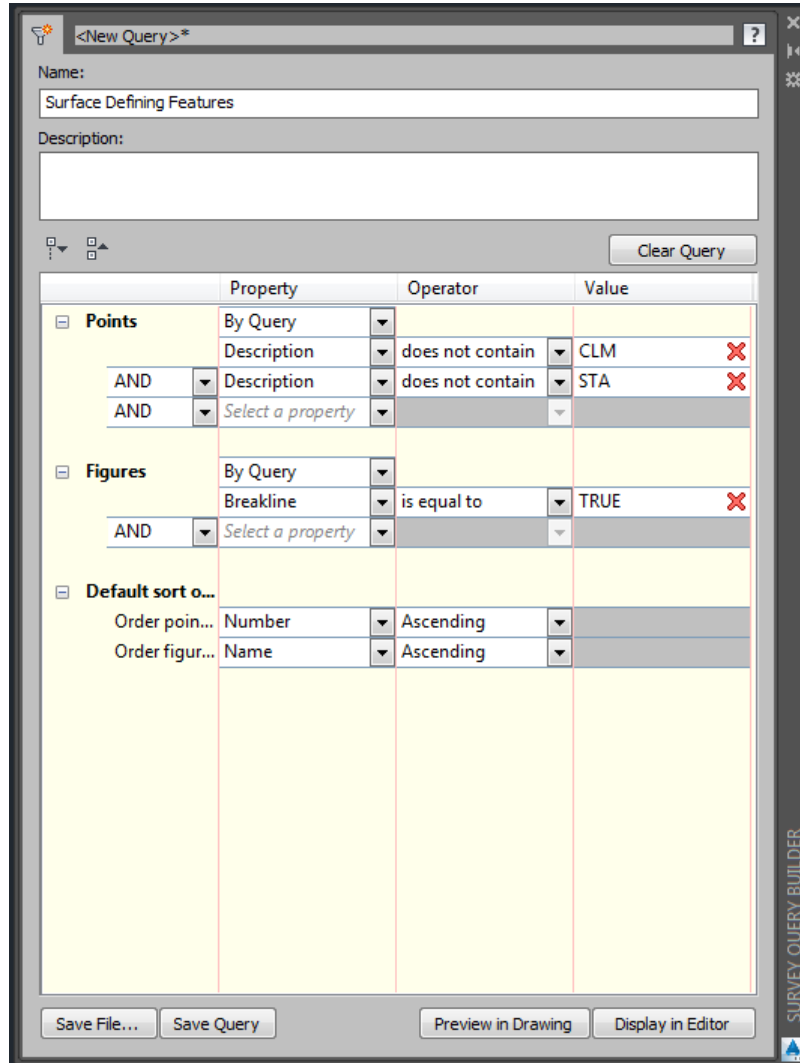
Having given the query a name I now need to configure the data properties I would like to filter by. To do this I am required to select between different properties, these vary between points and figures. For points we can select from *Elevation*, *Number*, *Description*, *Name*, *Control Point*, *Non-Control Point*, *Station Point*, *Easting* and *Northing*. While for figures the options are *Vertices*, *Description*, *Layer*, *Name*, *Site*, *Style*, *Breakline*, *Closed*, *Auto Generated*, *Lot Line*, *First Point X*, *First Point Y*, *Last Point X* and *Last Point Y*. We must then choose the rule (operator) we will filter by, the options are *is equal to*, *is not equal to*, *is less than*, *is greater than*, *is less than or equal to*, *is greater than or equal to*, *contains*, *does not contain*, *starts with*, *does not start with*, *ends with* and *does not end with*. Finally we must specify a value to test against the property.

For the survey database that I am using all of the points with the exception of those coded with the description CLM and STA are surface defining features. I will therefore need two entries under Points, first I will select *Description* as the property for both, *does not contain* as the operator for both and finally CLM as the first value and STA as the second.

Configuring the query to filter the correct figures for inclusion in a surface model is easier. The Figure Prefix Database has a check box column called *Breakline* and as we know breakline's are a surface defining feature. As I have utilised this option in my Figure Prefix Database I am able to select *Breakline* as the property, *is equal to* as the operator and *TRUE* as the value.

Having fully configured my query I am able to save it using the *Save Query* button, export it to a .qml file using the *Save File...* button. I can also *Preview in Drawing* or *Display in Editor* using the final buttons found at the bottom of the Query Builder dialog box.

Fig. 3



After saving the survey query it will appear in the drop down box at the start of the survey query contextual ribbon as well as being displayed under the *Survey Queries* container on the *Survey* tab of the *Toolspace*. Just as with the Figure Prefix Database and Description Key Sets, Survey Queries only need to be created once and are reusable throughout your portfolio of projects making them a very profitable investment.