# Civil 3D Survey Database Basics

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# About Seiler Design Solutions

Seiler Design Solutions provides informative, unbiased solutions to clients who are using Autodesk software, GeoSLAM scanners, PointCab software and drone solutions. We are a business where incredibly talented individuals are empowered to do whatever it takes to provide you the best and most affordable software solutions to fit your needs. Our clients trust us because we consistently provide them with reliable insights from experienced trainers all backed by the best user support in the industry.

Seiler Design Solutions is part of five distinct divisions owned and operated by Seiler Instrument & Mfg. Company, Inc. Our Industry Specialists and Application Engineers are dedicated to understand your firm's workflows, and are experienced in integrating services without sacrificing your productivity.

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# About the Speaker

- Application Engineer with Seiler Design Solutions
- Michigan Technological University alumnus
- Over 30 years experience in survey drafting, land development, transportation, site and utility design.
- Autodesk Certified Civil 3D Professional
- Autodesk Certified Instructor

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# Learning Objectives

- Understand the role of the Survey Database within Civil 3D both internally and within the WisDOT standards and practices.
- Automate the representation of existing conditions.
- Leverage Survey Queries to convey key site condition information.
- Be able to produce better deliverables to meet project requirements.

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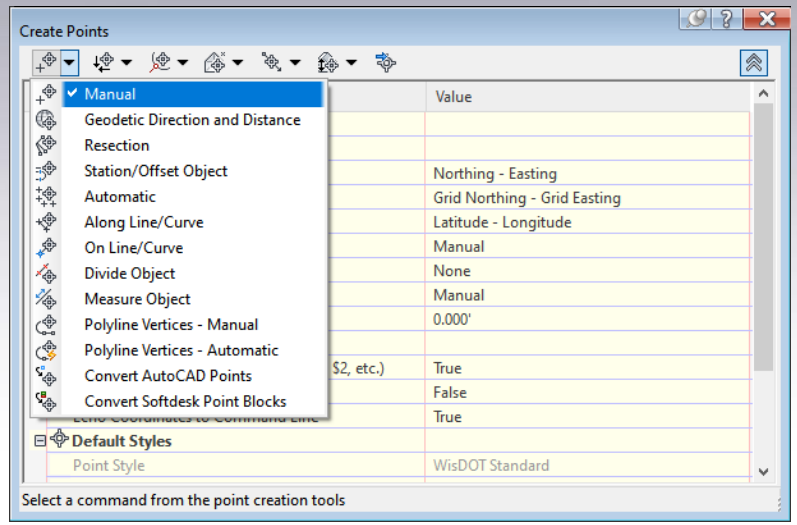
# COGO Points & Survey Points

- COGO stands for “Coordinate Geometry”. Basic building block and represent surveyed point objects or calculated positions.

- Can be placed in the drawing file via standard placement and calculation routines.

- Survey Points are COGO points tied to an external survey database and always represent field collected data.

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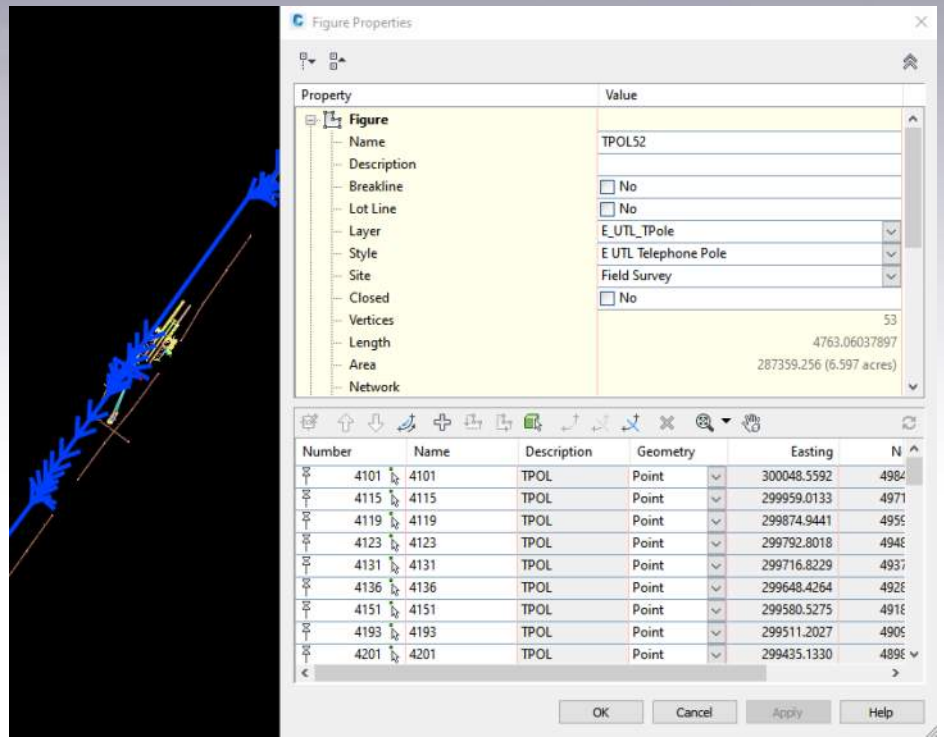
# Survey Figures




- Similar to Feature Lines. Represent 3D linework tied to Survey Points and created via the Survey Database.
- Used to represent linear features collected in the field.  Both topo and feature objects.
- Chain based Figures are edited via point table
- Vector based Figures can be manipulated similar to Feature Lines

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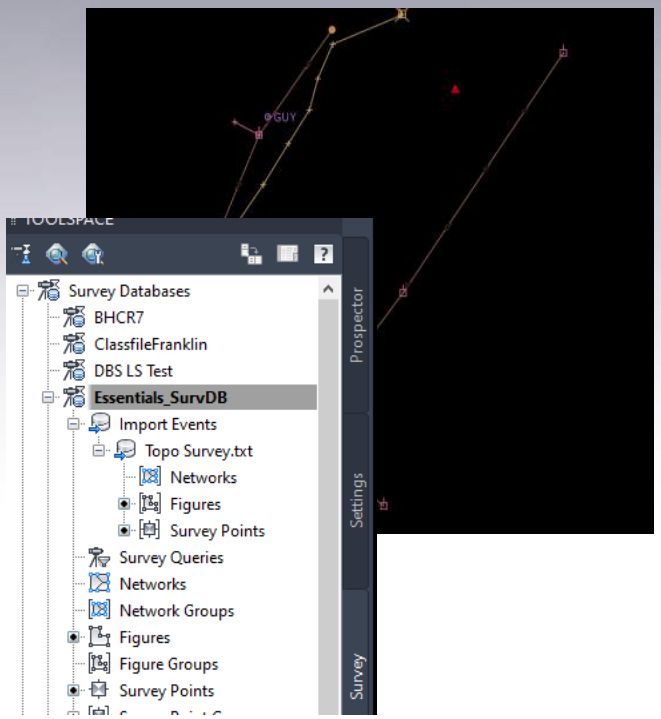
# Survey Database

- Database file and folder grouping to store survey point data for use in multiple drawings.
- Used to generate coded line work based on field codes.
- Independent of drawing – can be used to import data over and over again with consistent results.

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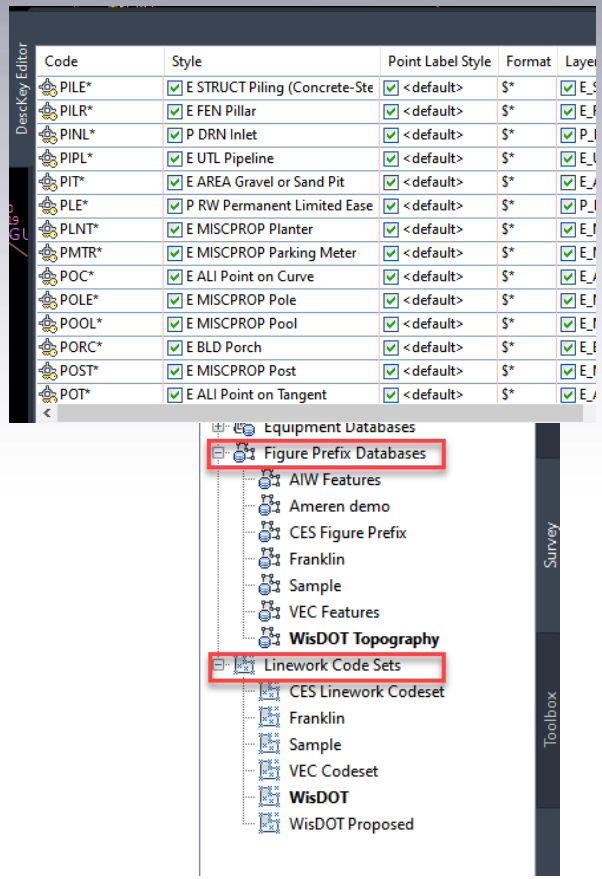
# Survey Database-Requirements




- Drawing Template complete with all required point styles, point label styles and Survey Feature Styles
- Descriptor Key Set within Template. Maps feature codes to point styles and point label styles
- Figure Prefix Database and Line Code Library. Independent files that work in tandem with the drawing template to complete linework within the survey database.

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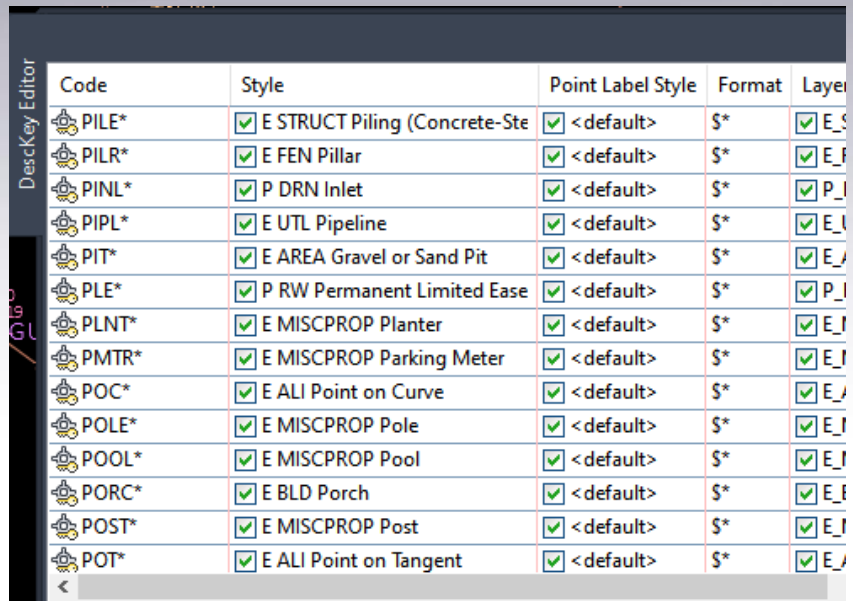
# Descriptor Key Set




| Code | Style | Point Label Style | Format | Layer |
|---|---|---|---|---|
| PILE* | E STRUCT Piling (Concrete-Ste | <default> | $* | E_S |
| PILR* | E FEN Pillar | <default> | $* | E_F |
| PINL* | P DRN Inlet | <default> | $* | P_I |
| PIPL* | E UTL Pipeline | <default> | $* | E_U |
| PIT* | E AREA Gravel or Sand Pit | <default> | $* | E_A |
| PLE* | P RW Permanent Limited Ease | <default> | $* | P_I |
| PLNT* | E MISCPROP Planter | <default> | $* | E_I |
| PMTR* | E MISCPROP Parking Meter | <default> | $* | E_I |
| POC* | E ALI Point on Curve | <default> | $* | E_A |
| POLE* | E MISCPROP Pole | <default> | $* | E_I |
| POOL* | E MISCPROP Pool | <default> | $* | E_I |
| PORC* | E BLD Porch | <default> | $* | E_B |
| POST* | E MISCPROP Post | <default> | $* | E_I |
| POT* | E ALI Point on Tangent | <default> | $* | E_A |

- Part of Drawing Template complete with all required point styles, point label styles and Survey Feature Styles
- Multiple Key Sets can exist in a drawing, Civil 3D uses in preferred order
- Can include special parameter codes like scale and rotate.

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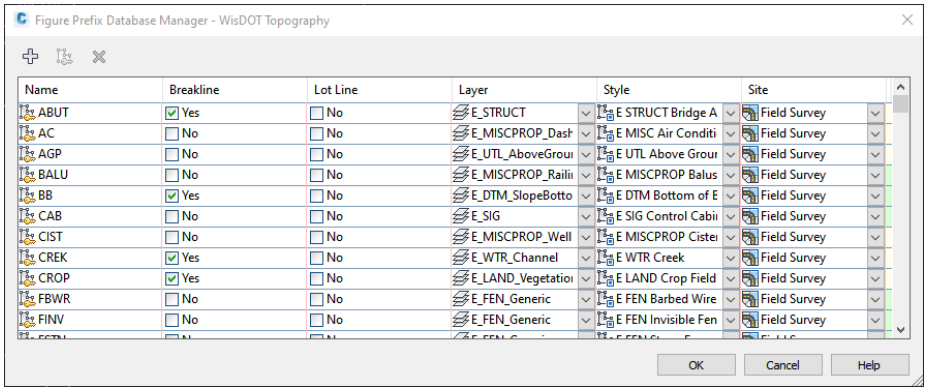
# Figure Prefix Database

- Created as independent file, but tied to a template when created.
- Custom file typically located at:
  **C:\ProgramData\Autodesk\C3D 20XX\enu\Survey**
- Collection of feature codes associated with linear features.

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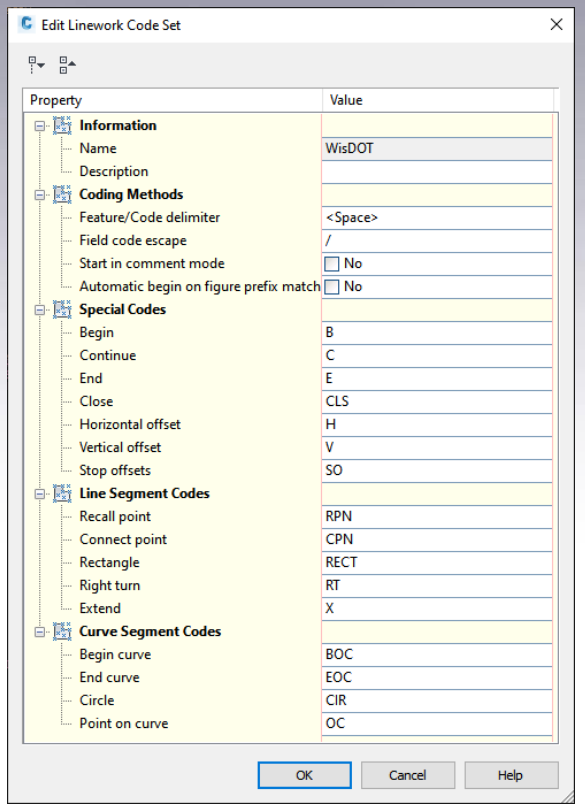
# Line Code Set

- Created as independent file.
- Custom file typically located at:
  **C:\ProgramData\Autodesk\C3D 20XX\enu\Survey**
- Collection of special line control codes.

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# Starting a new Survey Database

- Two methods, standard create or WisDOT method.
- Either method: Set a Working Folder.

Create Method:

1. Navigate to Survey Database tab on Toolspace
2. Right Click on “Survey Databases”
3. Choose “New Local Survey Database…”
4. Creates Database with standard settings
5. Change survey database settings as needed.

WisDOT method

1. Create project folders system per WisDOT Project Template
2. Navigate to Survey Database tab on Toolspace
3. Set working folder to appropriate project folder under ..\ProjNo\BaseData\Survey
4. Create “New Local Survey Database…”
5. Set additional survey database settings as needed

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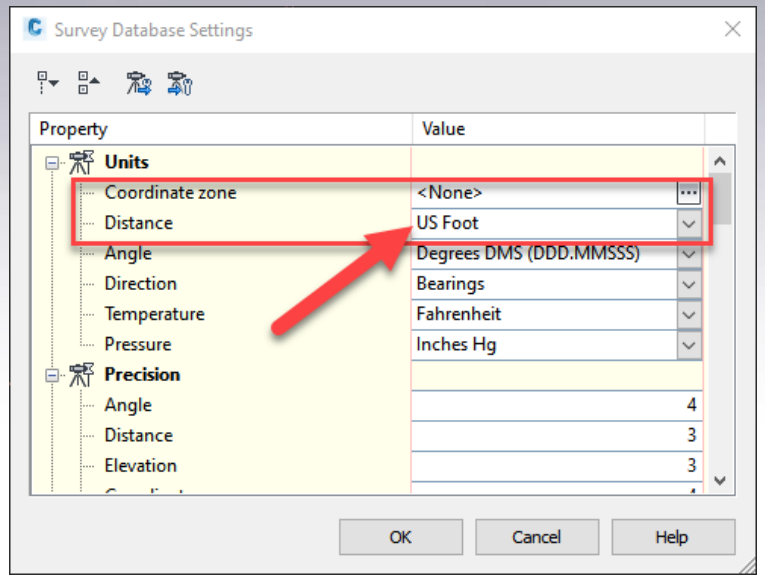
# Attention – Important Detail!

- Make sure Survey Database settings are set. Right Click on Survey Database name, choose “Edit Survey Database Settings”
- Make sure Distance is set properly to match drawing, typically US Foot
- Coordinate Zone can be set or left alone.
- Any differences between these settings and drawing will cause a transformation of coordinates in drawing.

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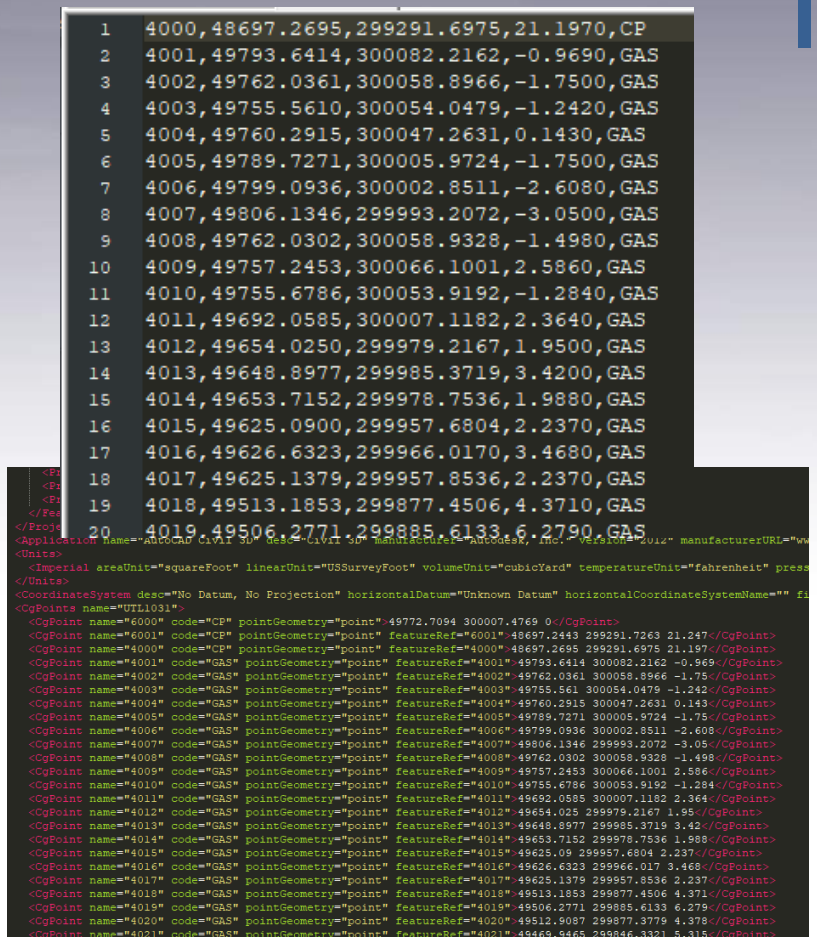


# Import Data

- Typically CSV or XML file
- Data is already in corrected final coordinates, PNEZD
- First word of description is feature code. Line Codes are reserved and cannot be used for other parts of the description.
- Right Click on Database name>Import>Import Survey Data, follow the Wizard.

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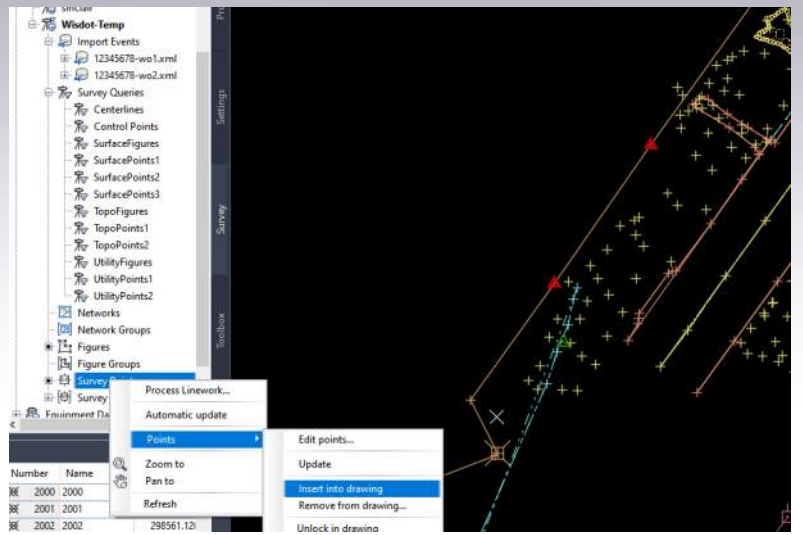
# Import Survey Figures and Points into Drawing

- Points and Figures get inserted into drawing from database either directly or though queries.
- Check and fix Points and Survey Figures.
- Points can be Unlocked in drawing to move, but must be corrected IN database.
- Figures can be edited using Survey Figure Properties or by using Feature Line Editing Tools
- Figures can be written back to database.

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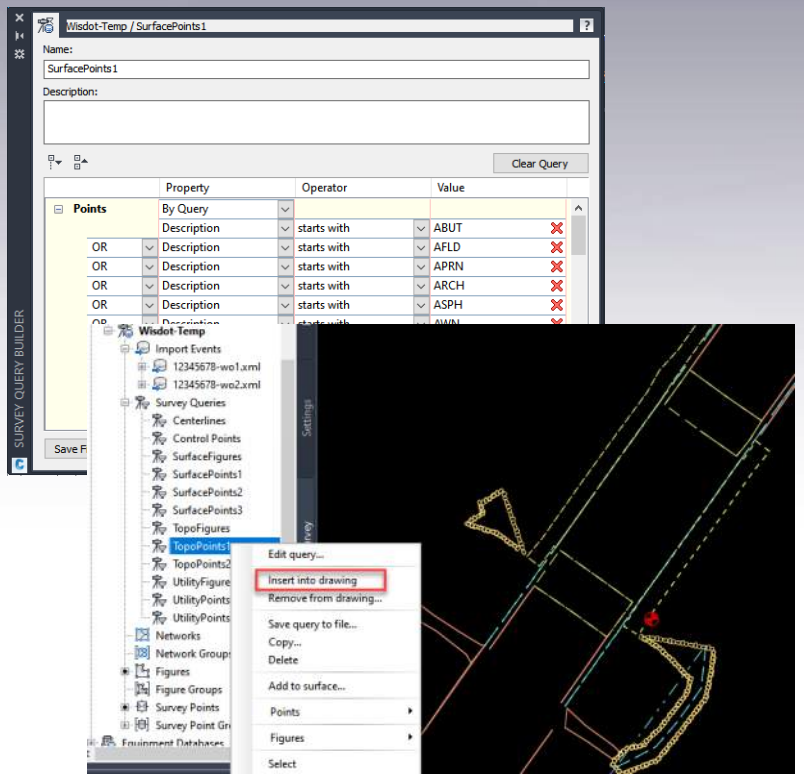
# Survey Queries

- Organized method to import Points and Figures into a drawing (WisDOT preferred)
- Filter Points and Figures in a variety of methods.
- Limit of 25 definitions per query, use multiple queries as needed.
- Points and figures read directly into Surface definition via query.

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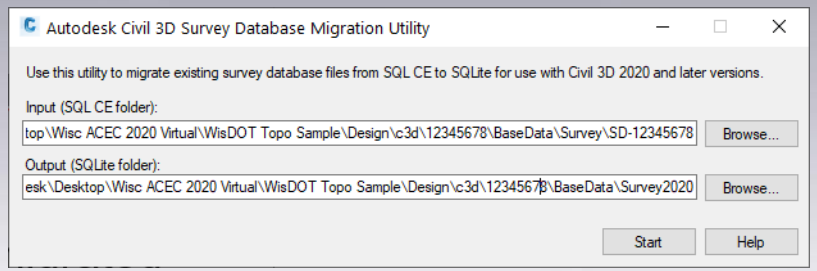
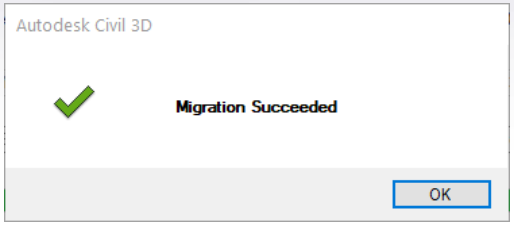
# Converting Old Databases

- Pre Civil 3D 2020 databases are in SQL CE .sdbx format
- Civil 3D 2020 databases are in .sqlite and are not backward compatible.
- Older Survey databases must be migrated using a standalone migration tool. Download this tool from your Autodesk account.
- Migrated databases must be pathed to a new folder. This preserves the original as backup.

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# Thank You.

**Questions?**

**Contact us**

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