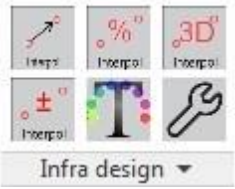
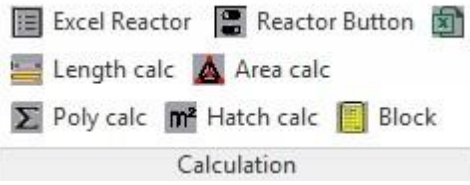
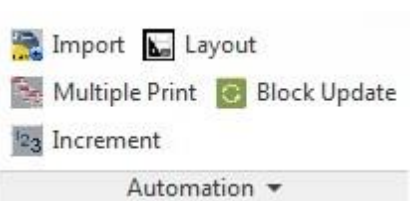
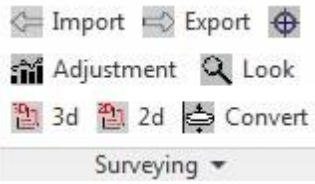
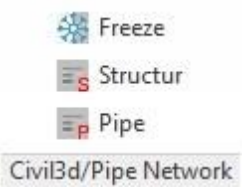
Infratools

Table of contents

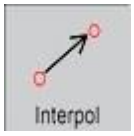
Welcome

Push Run-button to start Infratools in your current Drawing

	**functions for setting, interpolate, raise/low Heights**
	**functions for calculating Autocad drawing objects**
	**Import/Export point-coordinates list as file**
	**functions for modifying objects in Autocad drawing database**
	**Automation of operations ex. without open drawings**

	**Fixing surveying files**
	**Properties of pipes and structures**

Infra Design



Interpolation between heights

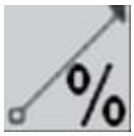
Interpolation from selected height

Show height from pickpoint

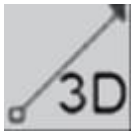
Change elevation from multiple height (raise or low)


Mark height text with underline or parenthesis


Modify slope between heights by pushing left/right button from mouse



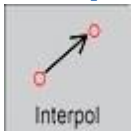
Show slope values along 3dPolyline segments



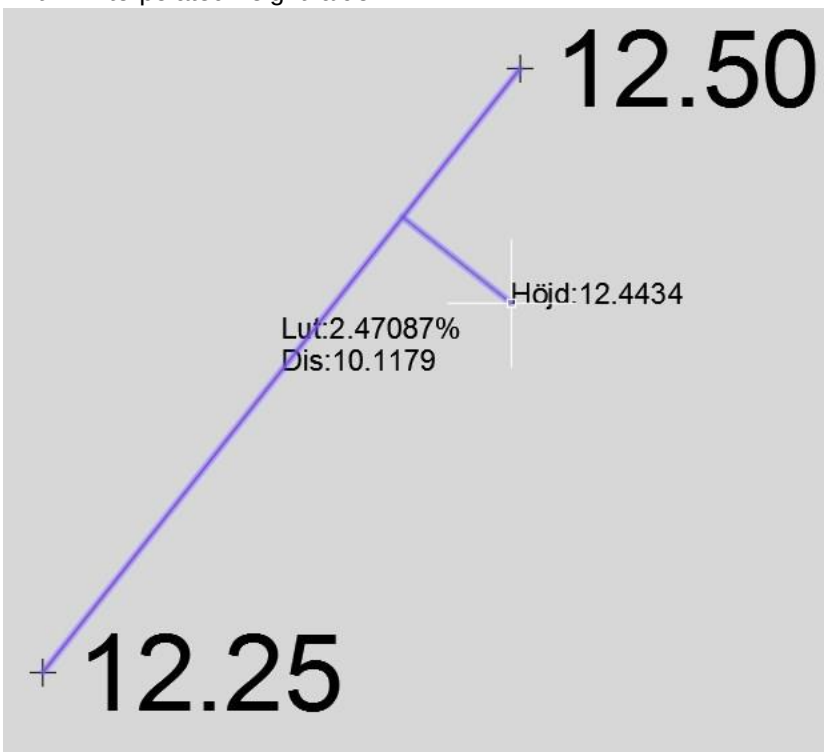
Get heights in selected spaces from 3dPolylines


Get height on selected surface from Civil3d

Interpolate between heights



Function need to pick two heights, which are blocks with attribute (within elevation value)
Enter textheight: <1.0>:
Select first and then second height and pick new position for interpolated height.
It displayed temporay a magenta line, in the middle Slope(%) and Distance(m). The height on the cursor is calculated between selected heights.
Pick a Position to create new height. Automatically it sets block with name "Level" and attribute "Elevation" within interpolated heightvalue.



Interpolate from height

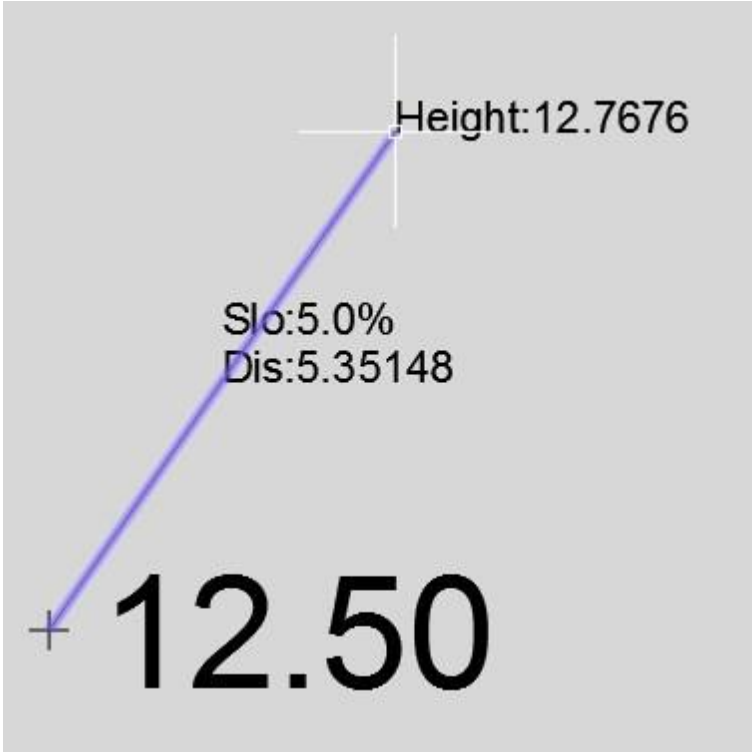
Pick first height and control settings for slope and distance on temporary magenta line.
In commandline are options to change settings:

```
Select position for new height [Level Slope Distance Elevation&slope ...Continue] <Enter>:
```

Press key 'L' to set a fix value for elevation
Press key 'S' to set slope value
Press key 'D' to set distance between first and new height
Press key 'E' to set both elevation and slope to get new height
Press key Enter to continue with normaly modus

With all changes of settings is calculated directly new height on cursor.

Pick position for new height and in commandline get option to interpolate from last calculated height or from current height.



Show height from pickpoint

Show height from pickpoint

Pick position in Model-space, if picked point has a point coordinate with z-value it set height block named ‘Level’ with elevation value getting from z-value otherwise elevation in height is 0.00. This block can use for interpolation uses.

Adjust heights

Change height value from block ‘Level’. To raise values type positive value or lower with negative value. Select multiple ‘Level’ blocks to apply changes.

Textstyle

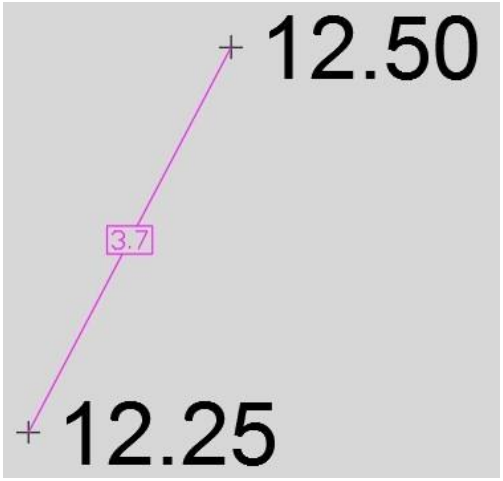

Mark height text with underline or parenthesis

Give ‘Level’-attribute elevation (‘elev’..elevation) different types of display. Three options to change style 1without underline or parenthesis 2-with underline 3-with parenthesis.

Interpolate with mouse control

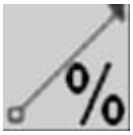
Pick two heights type block named ‘Level’ first start height and second height to modify height value. With option interval in % is it possible to change factor for raise or lower interval from second height. If interval is positive press left mouse button to raise or right button to lower height. Automatically it changes attribute value of Level.

Customizing height by controlling with mouse button left/right
Enter interval in %: <0.1>: that mean here can set modify value in percent.
Select first height to start and second height to modify height value



Push Left or Right button from mouse device to raise or lower heights.

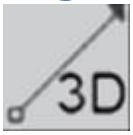
Explore 3dPolylines



Show slope values along 3dPolyline segments

Pick two heights type block named ‘Level’ first start height and second height to modify height value. With option interval in % is it possible to change factor for raise or lower interval from second height. If interval is positive press left mouse button to raise or right button to lower height. Automatically it changes attribute value of Level.

Heights from 3dPolylines



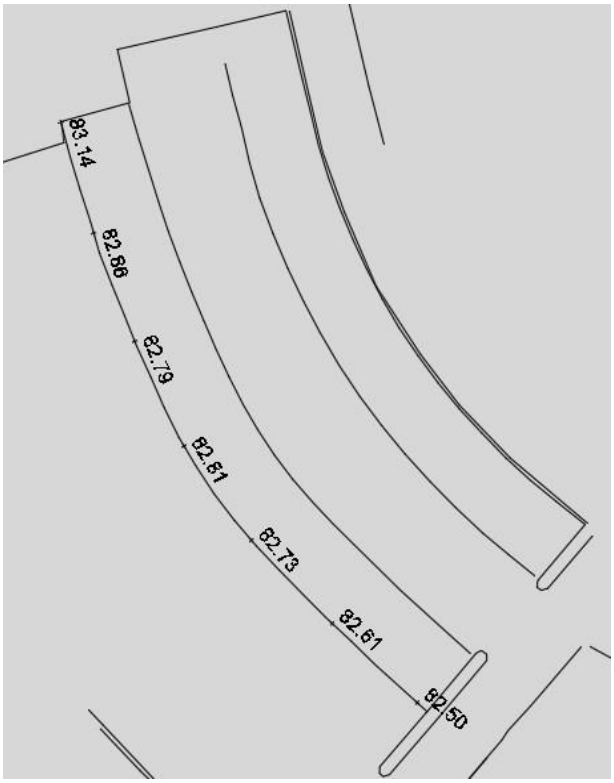
Validate heights on selected interval from 3dPolylines with z-value from intersection along Polyline. Select first 3dPolyline there extract heights and second oriented help Polyline which needs for calculating interval in meters between extracted heights. Press enter and get heights in right, press enter and rotate all generated heights 90 degree.

Polyline elevations from 3dPolylines
Select 3dPolyline to extract heights and press <Enter>
-> this Polyline should extract heights

Select a helpline for interval and press <Enter>
-> this Polyline control interval and planview of heights

Select text height -> for
generate Level-block

Continue rotate <Yes>:
-> Press Enter to rotate heights on selected Polyline

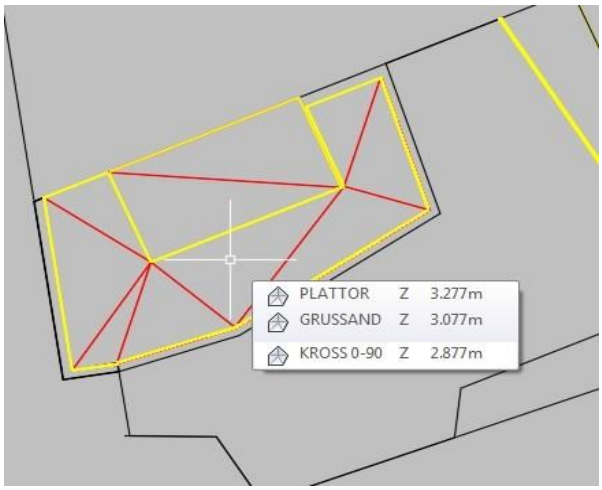


Add heights from Surface

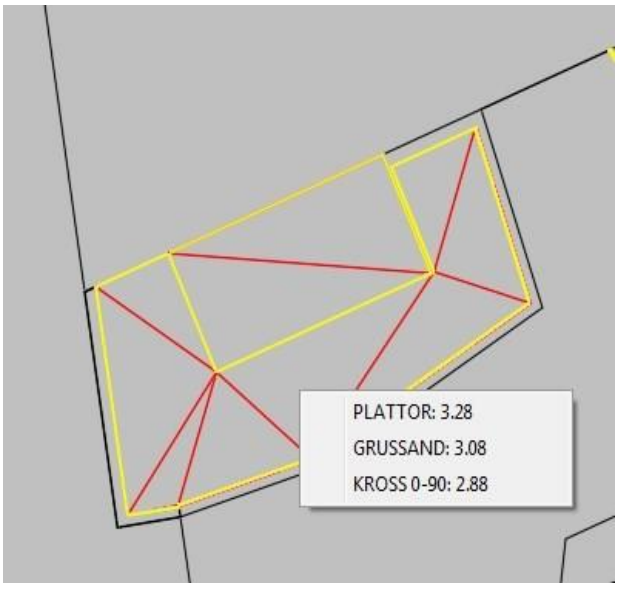
Application Autocad Civil3d make it possible to create Surfaces, which means a triangulated model from points of coordinates in x,y,z. This needs to generate height values as ‘Level’-block. I doesn’t matter if many Surfaces are superimposed. Pick a position on Surface, it display a pickbox on cursor there it can select which Surface height will needed.

Surface elevation to get heights from selected Civil3d surface
Civil3d show heights from Surface (1) but it needs a height as value in Model space.
Start command and pick on Surface (2), select in pickbox this Surface to create a height (example "PLATTOR").
Automatically it creates Level block with height (3.28) on selected position.

1)



2)



Calculation

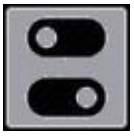
 Excel Reactor  On / Off

 Table export to Excel

 Calculate length from Line objects

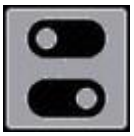
 Calculate area from "closed" Polylines

 Generate Polyline segments report

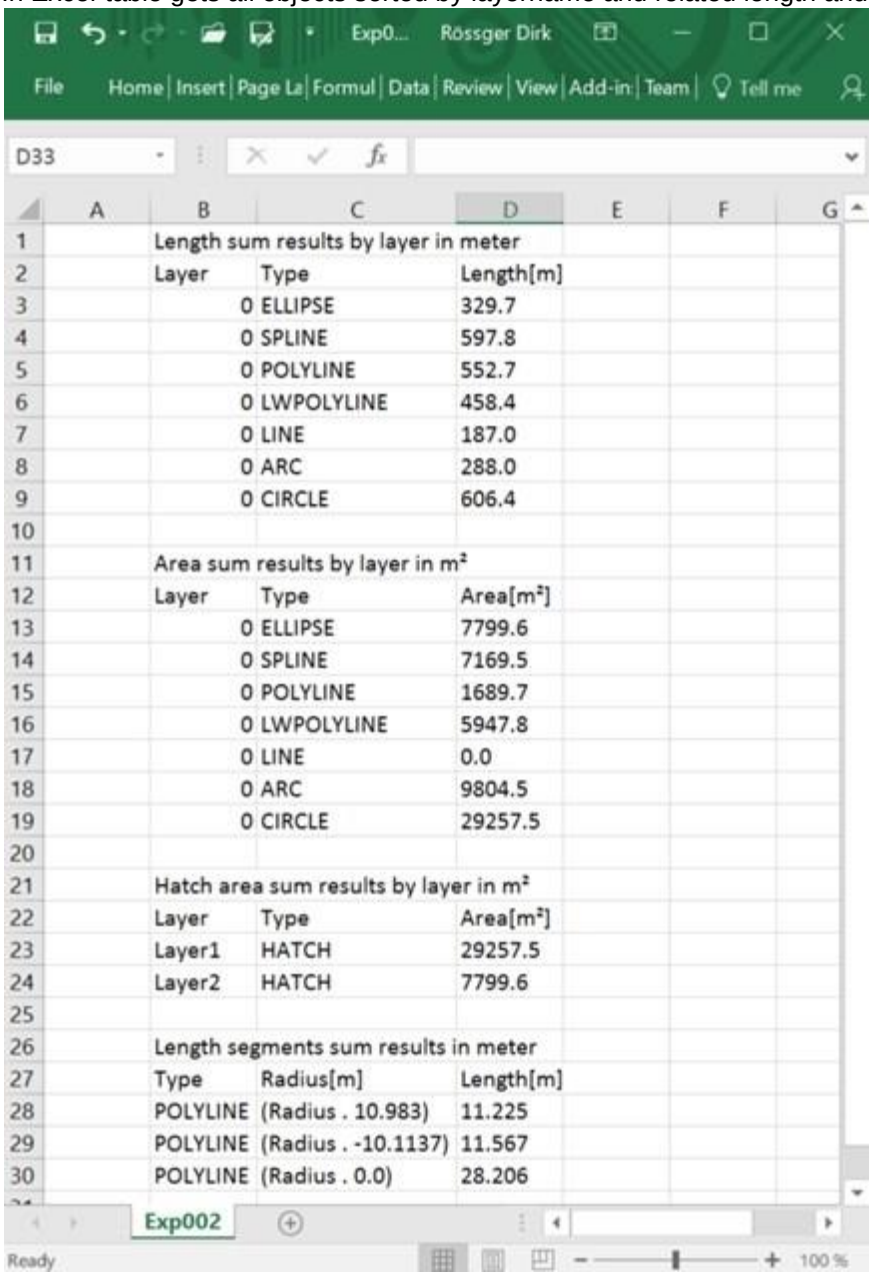
 Calculate area from Hatch objects

 Count blocks

Excel Reactor

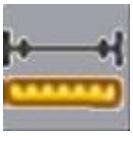
 Excel Reactor  On / Off  Table export to Excel

With button on/off it can validate Reactor. In on-modus all selected objects in model-space copied automatically to clipboard moreover all values for length and area calculates together – total result shows in macrobar on Autocad window below right. Interim results can read out in Excel with press result-button. In Excel-table gets all objects sorted by layername and related length and area.



	A	B	C	D	E	F	G
1		Length sum results by layer in meter					
2		Layer	Type	Length[m]			
3		0	ELLIPSE	329.7			
4		0	SPLINE	597.8			
5		0	POLYLINE	552.7			
6		0	LWPOLYLINE	458.4			
7		0	LINE	187.0			
8		0	ARC	288.0			
9		0	CIRCLE	606.4			
10							
11		Area sum results by layer in m²					
12		Layer	Type	Area[m²]			
13		0	ELLIPSE	7799.6			
14		0	SPLINE	7169.5			
15		0	POLYLINE	1689.7			
16		0	LWPOLYLINE	5947.8			
17		0	LINE	0.0			
18		0	ARC	9804.5			
19		0	CIRCLE	29257.5			
20							
21		Hatch area sum results by layer in m²					
22		Layer	Type	Area[m²]			
23		Layer1	HATCH	29257.5			
24		Layer2	HATCH	7799.6			
25							
26		Length segments sum results in meter					
27		Type	Radius[m]	Length[m]			
28		POLYLINE	(Radius . 10.983)	11.225			
29		POLYLINE	(Radius . -10.1137)	11.567			
30		POLYLINE	(Radius . 0.0)	28.206			

Calc length

 Calculate length from Line objects

All drawing objects with property length. Total result of specifically length-object calculates together and shows as Excel-table in model-space.

Length sum results by layer in meter		
Layer	Type	Length[m]
0	ELLIPSE	329.7
0	SPLINE	597.8
0	POLYLINE	552.7
0	LWPOLYLINE	458.4
0	LINE	187.0
0	ARC	288.0
0	CIRCLE	606.4

Calc area


Calculate area from "closed" Polylines

All drawing objects with property area. Total result of specifically area-object calculates together and shows as Excel-table in model-space.

Area sum results by layer in m²		
Layer	Type	Area[m²]
0	ELLIPSE	7799.6
0	SPLINE	7169.5
0	POLYLINE	1689.7
0	LWPOLYLINE	5947.8
0	LINE	0.0
0	ARC	9804.5
0	CIRCLE	29257.5

Polyline segments


Generate Polyline segments report

Select Polylines to calculate segments inside selected Polyline. If segment is an arc-segment it shows radius value. Positive value means in drawn direction arc is going to right otherwise to left. Line segments shows with radius 0. All values with same radius calculates together and shows in Excel-table in modelspace

Length segments sum results in meter		
Type	Radius[m]	Length[m]
POLYLINE	(Radius . 10.983)	11.225
POLYLINE	(Radius . -10.1137)	11.567
POLYLINE	(Radius . 0.0)	28.206

Calc hatch

Calculate area from Hatch objects

Total results of specifically hatch-object calculates together and shows as Excel-table in model-space.

Hatch area sum results by layer in m²		
Layer	Type	Area[m²]
Layer1	HATCH	29257.5
Layer2	HATCH	7799.6

Count blocks


Count blocks

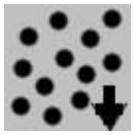
Calculate all selected blocks together and show sum results in Excel-table.

Block Data		
Preview	Block Name	Count
	structure	49
	lamp	1
	cycle	10
	street lamp	48
	forest	2
	rocks	7
	tree	59
	coordinate	64
	manehole	1
	flag	1

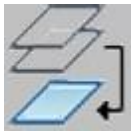
Coordinates

Import points from pxy-format file

Export points to pxy-format file


Save points to txt-format fil


Change Layerstructure from csv-format file


Change Layerstructure from dialog box

Import Export pxy file

Import points from pxy-format file 

Export points to pxy-format file

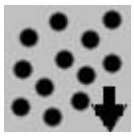
Import survey points from coordinate file pxy-format. Remove first two rows (yellow marked) before import in Autocad. This are only rows fro description that does not has a effect for import to Autocad. In process it creates block named ‘meas’ with 3 attributes for number, height and code.

Point Number	x-coordinate	y-coordinate	height	Point Code	Line between

```
XYZ-COORD-FILE  ,V1.00,1998-05-05,                                    ,
                                  ,                                   ,
1.001           40797.9610  66013.9380     82.3370 MI511B_T          ,
1.002           40798.4230  66013.2490     82.2390 MI511B_T          ,
1.003           40798.6490  66012.9030     82.2210 MI511B_T          ,
1.004           40799.0940  66012.0710     82.4660 MI511B_T          ,
1.005           40799.2800  66011.6350     82.5340 MI511B_T
1.006           40800.3300  66009.5210     82.6180 MI511B_T
1.007           40801.6940  66006.8280     82.5720 MI511B_T
```

Export ‘meas’ block to pxy-file in same procedure.

Points to File


Save points to txt-format fil

Points are a type of Autocad object which can export to coordinate file in txt-format. After selecting of all points is it possible to give a start point number and pre- suffix before and after created number. In procedure it creates text with contents of point number and pxy-file saved on selected path.

Point Number	x-coordinate	y-coordinate	height	Point Code	

```
1,6281827.006,113704.326,7.483,11
2,6281829.182,113777.543,7.563,11
3,6281836.852,113857.433,7.094,11
4,6281740.512,113955.900,6.978,11
5,6281640.549,113961.322,7.322,11
6,6281601.861,113903.091,6.873,11
7,6281625.281,113839.842,7.282,11
8,6281649.650,113791.147,7.4
9,6281690.174,113761.943,7.4
10,6281750.968,113713.192,7.
```

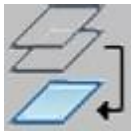
Change Layernames by csv-file


Change Layerstructure from csv-format file

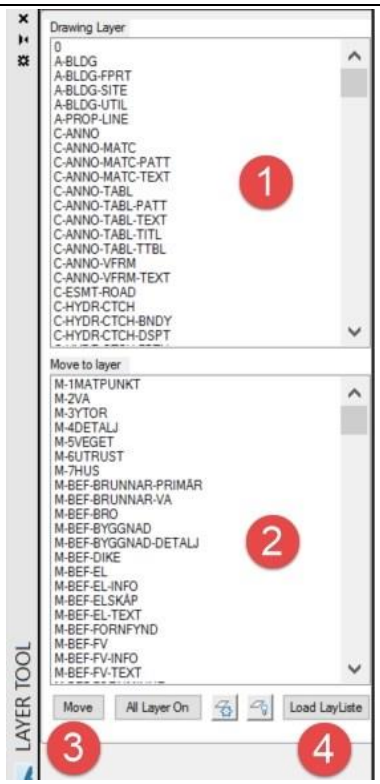
Often is coming drawing files from clients which have another layer structure as it need. This is easy to change with a csv-file in Excel. Only have to create comparing between old and new layer in this csv. Open Excel and create two columns where first column describes Old layer name and second new layer name. In this example does routine convert all layers with ‘AD_SLED_...’ to ‘M-BEF-VA…’ After converting is it possible to delete unused old layers.

Old layer name	New layer name
AD_SLED_SLUT	M-BEF-VA-TEXT
AD_SLED_SLUT_AP	M-BEF-VA-TEXT
AD_SLED_SLUT_TXT	M-BEF-VA-TEXT

Change Layernames by dialog


Change Layernames from dialog box

Similar like convert layer names can this routine move drawing object from layer to another layer.



1)
Old layer:
Dialog display all layers in drawing where are contents of Autocad objects. Select layer after it freeze all other layers to can see which drawing objects decide on this layer.

2)
New layer:
Dialog display all layers that can use for move layer objects to selected layer in this bar

3)
After select old and new layer press button ‘Move’ to save drawing objects to new layer. After this step all objects have moved to new layer. Go back with ctrl+z.

4)
Button Load layerliste can import layer-name-structure from a txtfile

Drawing cmd


Draw slope signature between two lines


Change planview without modication of coordinatsystem


Change layer color


Remove layers by choice in dialog


Change attribute color


Marks heights with flag (leader)


Match block properties

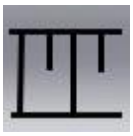

Rotate multiple blocks and text


Rename block


Rename layer


Insert multiple blocks

Draw slopes

 Draw slope signature between two lines

For planning of road or ground-design is here an option to symbolize slope between top- and bottom-line. Select first top-line as Polyline or Spline and then bottom line. Define distance between hatch-lines as value or by picking by two points from slope which wants to create. All created hatch-lines generates in a block to can easy modify (remove and redraw).

Plan view

 Change planview without modication of coordinatsystem

Plan view can have different direction, standard is in north-south direction. Without change of world coordinate system can change plan view by picking two points in model-space. This can be useful ex. Layout viewports to get better readable drawing. This routine connect Autocad command ucs (coord. System rotate by z-ordinate by two picked points) and ucs by preview.

Change Color

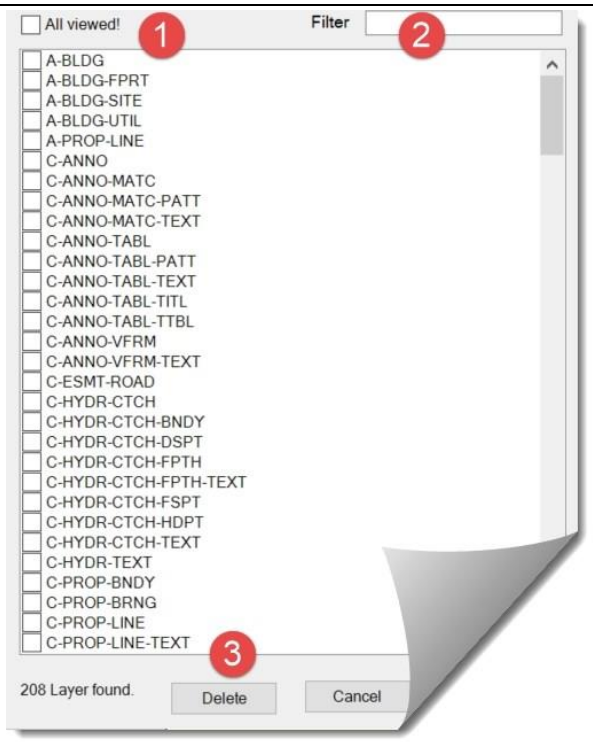
 Change layer color  Change attribute color

Condition to could change color from layer object is that drawing object is created in color ‘bylayer’. Pick a drawing object (but not a block) and select new color in dialog. Then changes layer color after choice. This functionality is also useable for extern layer color from x-reference-object. Same procedure pick x-reference layer in model-space and select new color in dialog.

Erase Layer

 Remove layers by choice in dialog

Often is not possible to erase layer from Autocad database of numerous reasons. Layer contents drawing objects, Layer are anchor in dwt-template for example Civil3d-object-layer.
In all these cases this routine can still delete selected layer. If layer contents objects, all removed layers can recognize, how many objects was deleted.
Open text window (textscr) to see counted objects.

	1) All viewed that current previews 2) Option to filter layer names upper lower casesensitive 3) Select layernames to delete and press finally Delete button

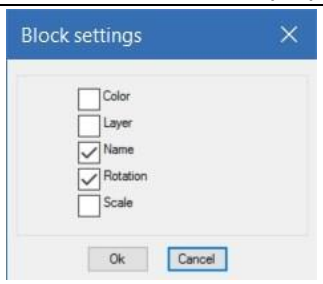
Height flag


Marks heights with flag (leader)

Option to give a ‘Level’ block a flag. Block object converts to leader-object.

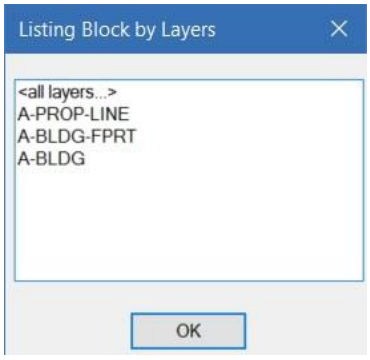
Match block properties


Match block properties

	Select source block (change settings) and select blocks that become new properties. In settings select properties that should match block.

Rotate blocks


Rotate multiple blocks and text

	Select blocks or texts in one selections-set then take a choice in dialog. Dialog shows layers from selected objects. Select layer and rotate object by drawn helpline.

Rename blocks


Rename block

Select block to wants rename, it shows current name of the block. Then put a new name for block and press enter.

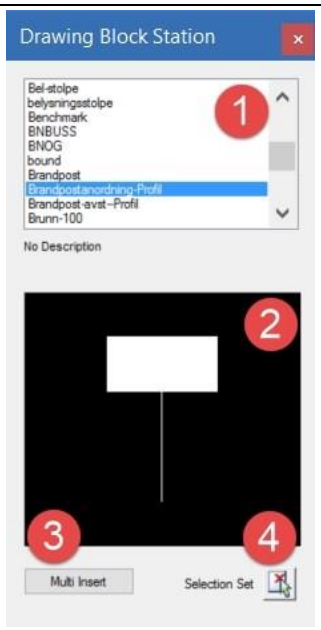
Rename layer


Rename layer

Select object in model-space, it shows current name of layer. Then put a new name for layer and press enter.

Block station


Insert multiple blocks



1)
In dialog shows all block in current drawing-database, they don´t have to be visible. Select block to want to insert in model-space.
2)
It is possible to give a description for blocks, they
are saved in system csv-file:
C:\ProgramData\Autodesk\ApplicationPlugins\Infratools.bundle\Contents \Resources\program\Blockstation.csv -> In preview shows block appearance.
3)
Multi-insert button can paste block many times. Selection set show counted inserts. 4)
If press button can change properties of all pasted block in one action.

Automation

Import data from drawing


Layout settings and print

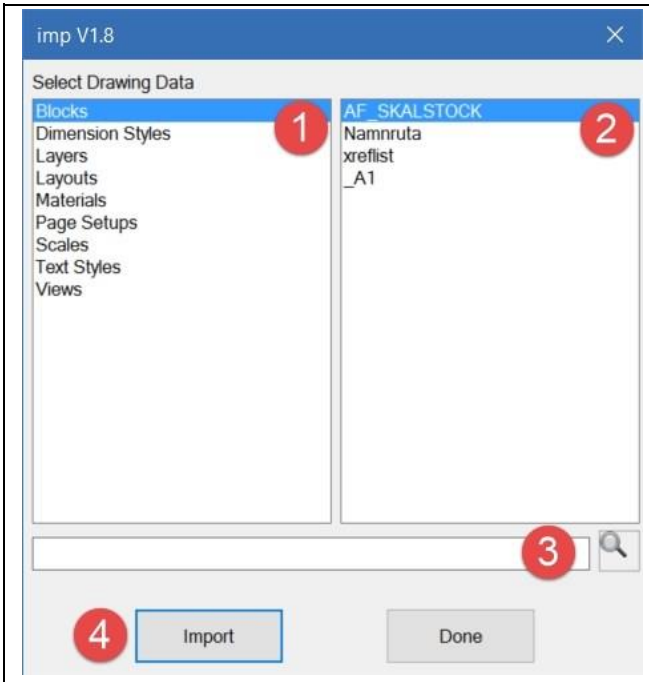

Multiple print to pdf-format


Update block attributes

Import datas from Drawing

Import data from drawing

After start select a drawing-file to import data from. Functionally it works that selected file opens in background (must be closed) and read out all drawing-objects.



1)
In left box shows all types of datas. Select one of them.

2)
Make a choice, can be many, of objects wants imported in current drawing.

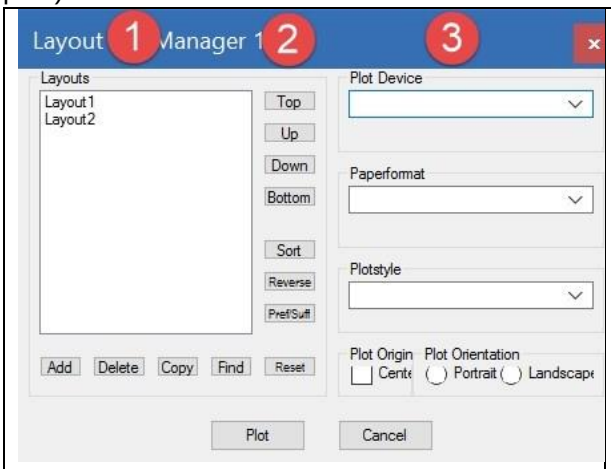
3)
Look for objects in selected drawing.

4)
After these steps press Import-button to finish import datas

Layout manager


Layout settings and print

Manage layouts in current open drawing. All changes save in selected layout-object (even if not need to print)



Displayed layouts in drawing. Manage layouts with

1)

> Add create new layouts

> Delete remove selected layouts

> Make a Copy from selected layout

2)

> Top Up Down Bottom functions to sort layout tabs bellow.

> Sort by layout name

> Reverse sorting

> Pre/Suff set prefix or suffix for layoutnames

3)

> Plot Device change device from selected layouts.

> Paper format change print format from selected layouts.

> Plotstyle change ctb-plot-style from selected layouts.

Plot all selected layouts in one process.

Multiple pdf print

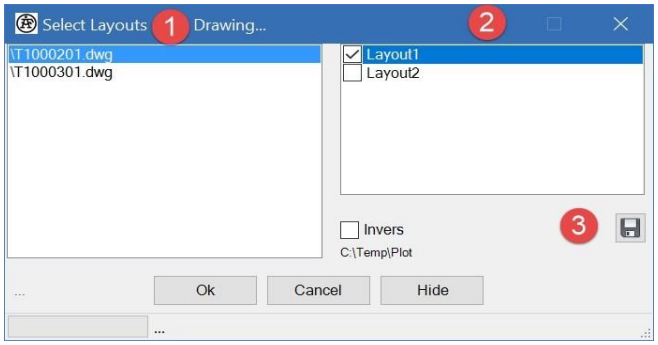

Multiple print to pdf-format

Select drawing-files to open in background and select ready layout within to print as pdf-file.

1)
Selected drawings

2)
Selected layouts in selected drawing **Invers** selection.

3)
Define path to want save pdf

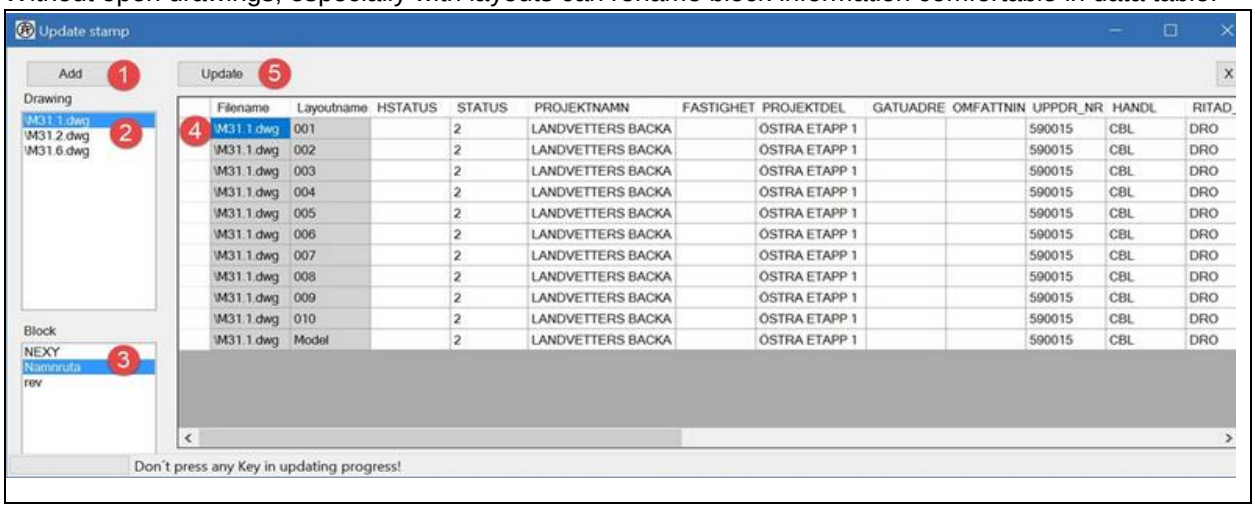


Press Ok to create pdf-files from selected layouts. Hide dialog to continue work.

Block attribute update

Update block attributes

Without open drawings, especially with layouts can rename block information comfortable in data table.



1) Add and select drawings to update block infos. All selected drawing files shows in Drawing listbox below

2) Select file in Drawing listbox (ex. M31.1.dwg) and wait a few seconds… in background opens selected file and read all blocks which have attributes. Detected block reflected in Block listbox below. Make a choice of block name who wants to update. Take a look in this example picture above. Both choices for drawing file and block name have selected modus.

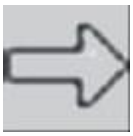
3) After selecting of block (ex. ‘Namnruta’) it take a little time shows all attribute values separated after layoutname.

4) In Datatable can changes attribute values of block. It can marks a hole column and type new value to change same attribute in all drawings.

5) Press Update button execution changes and wait until progress shows ‘Complete’

Surveying


Import from txt-format file

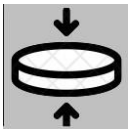

Export to txt-format file


Generate blocks along Polyline


Adjust survey points


Look for survey points with chocen code

Create 3dPolylines along survey points


Convert 3d to 2dPolyline


Offset Polyline with height

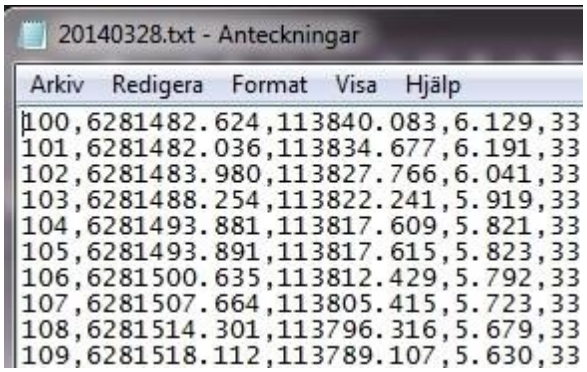

Remove segments from Polyline


Create symbols on survey points

Import Export from txt-file

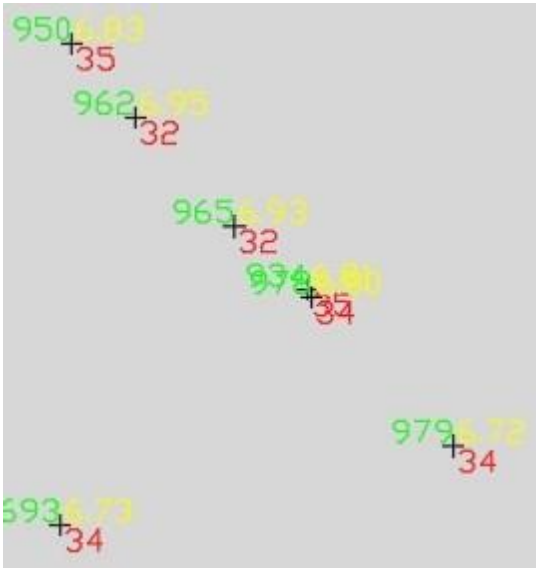
 Import from txt-format file  Export to txt-format file

Nr	X	Y	Z	Code



Selected **Import** txt-file must have ‘,’ as separator otherwise going read process wrong. Imported coordinate symbolize as block ‘meas’ wit attribute nr, height, code.

To can **Export** coordinates to txt-file it needs block named ‘meas’.

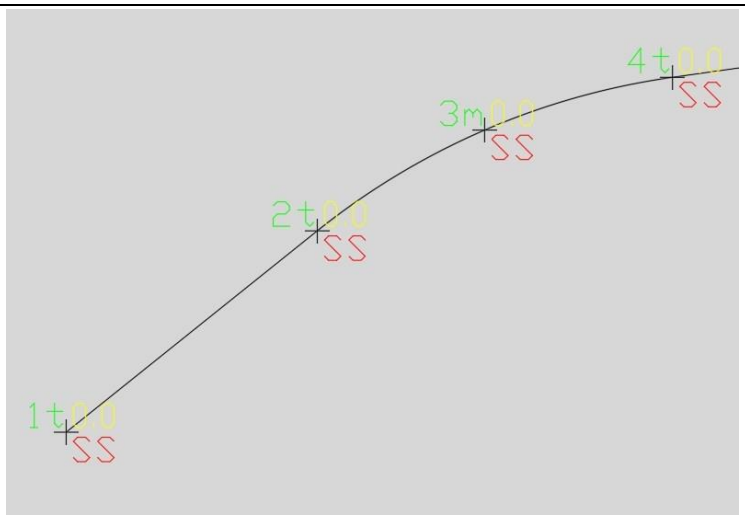


Autocad model-space

Stake out Polyline

 Stake out blocks along Polyline

Select Polyline to extract coordinates from vertex-point and arc-mid-points. Symbolized points ‘t’ for tangent-point ‘m’ for midpoint.
If it need can calculates more points in define interval. Points can be exported later to fil.



Autocad model space

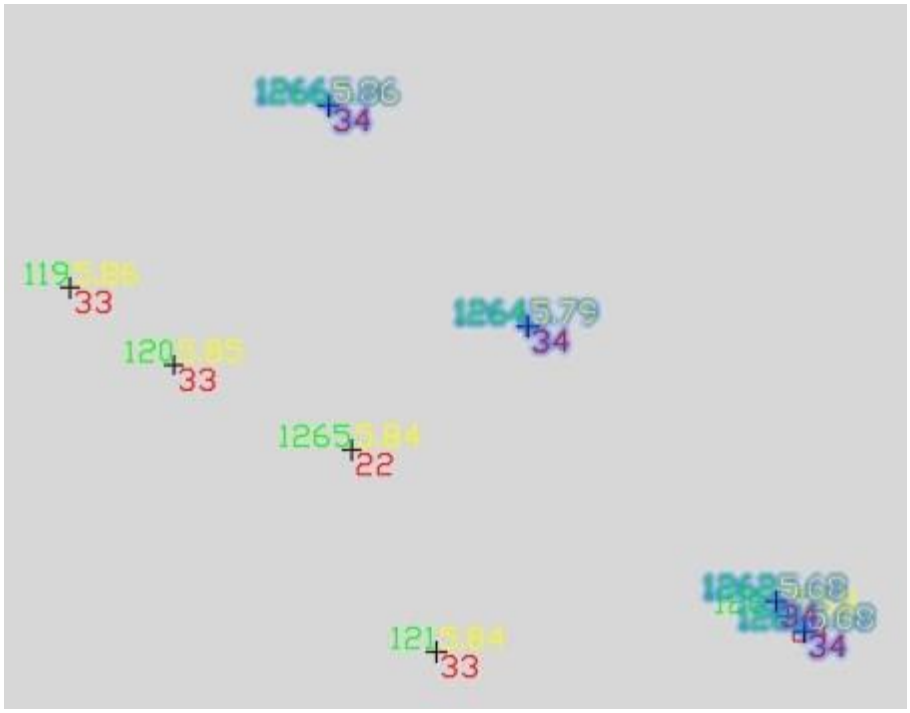
Adjust survey heights


Adjust survey points

Raise or lower imported survey point ‘meas’ block with define value positive to raise or negative to lower heights.

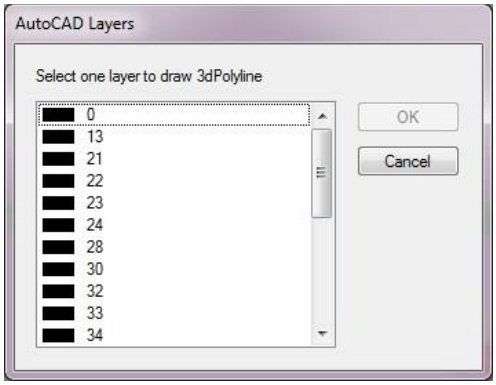
Look for survey points


Look for survey points with chocen code

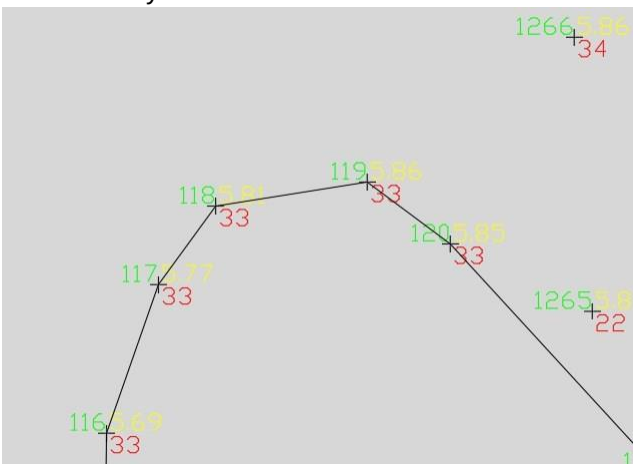
	Find survey points with same code. Example pick attribute ‘34’ on ‘meas’ block -> automatically marks all blocks with code ‘34’.

Draw 3dPolylines by points

Create 3dPolylines along survey points



Example pick attribute '33' on 'meas' block -> it opens dialog 'AutoCAD Layer' to select a layer where can draw 3dPolyline -> connecting points with same code with a 3dPolyline.



Autocad model space

Offset 3dPolylines

Offset Polyline with height

Offset 3dPolylines by side and right height. Chose which side for offset and define a z-value for height difference.

Remove Polyline segments

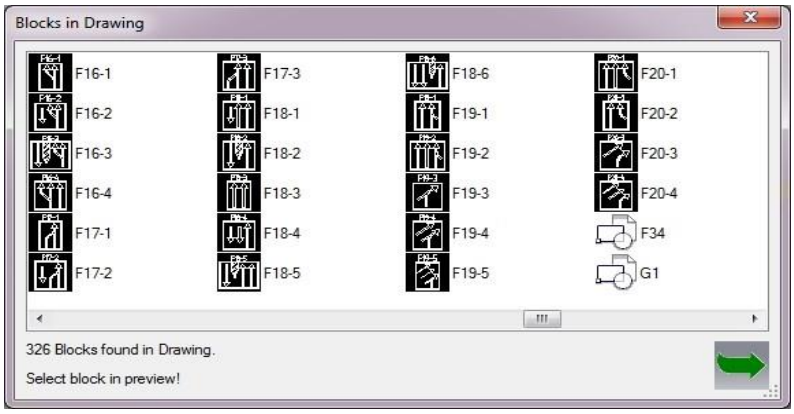
Remove segments from Polyline

Pick on Polyline segment to remove from Polyline (simply break command in Autocad).

Draw symbols by points


Create symbols on survey points

Generate symbols on imported survey blocks. Select code-attribute and scroll throw dialog ‘Blocks in Drawing' to generate symbol and press green button



Civil3d/Pipenetwork

Freeze pipes / structures

 Freeze Civil3d pipes and structures in profileview

Properties

 Properties from Civil3d structure  Properties from Civil3d pipe

Command works in Civil3d application, pick object and get properties as

· Height in meter

· Length in meter

· Slope in %