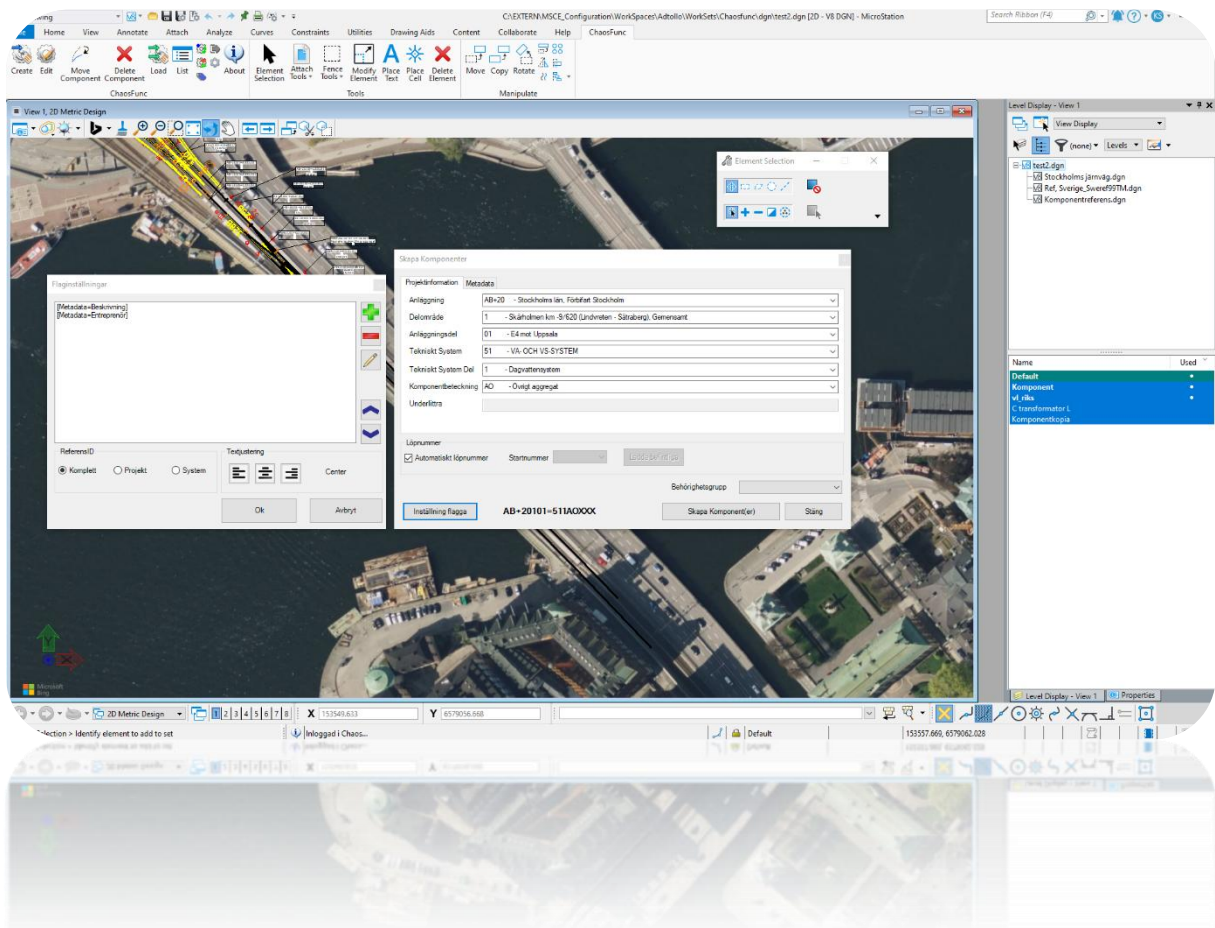


TrvCatenary

for MicroStation



User documentation

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About the document

This document describes the program TrvCatenary for MicroStation. The document describes how to use, install, and configure the application.

About TrvCatenary

TrvCatenary is an add-on to MicroStation CONNECT and later versions for the design of overhead lines. The program has many similarities to the CatDgn for MicroStation v8i but is developed from the ground up for the latest versions of MicroStation.

TrvCatenary complies with the Swedish Transport Administration's TDOK 2019:0215

The use of TrvCatenary requires basic knowledge of MicroStation.

Terms

The document uses the following terms and concepts:

MicroStation	An advanced 2D/3D CAD software from Bentley Systems used in infrastructure, architecture and many other industries.
Design file	The file in which MicroStation stores the drawing/map/construction. Also known as a dgn file.
Model	Each design file can contain one or more drawings. Each such drawing is called a model.
Sheet View	A special model designed for printing. This model is usually created in paper units unlike the maps which are in scale 1:1.
Text Style	Text stylesheet. Any text formatted with the same textstyle can be changed by modifying the corresponding textstyle.
Dimension Style	Dimension Set.
Dgnlib	A blank design file that contains templates for common settings such as levels and text styles.
Seed file	A template file that is used as a starting point when creating a new drawing. Different seed files are used for 2D and 3D.
Data button	Left mouse button. Used to provide data points and select from menus.
Reset button	Right mouse button. Used to exit drawing commands and display custom menus.
Snap	The ability of the cursor to attach to existing geometries when drawing.
Item Type	A technique for attaching attribute data to the elements.

Typography and conventions

The manual uses different types of text to highlight information of various kinds.

Captions

Screen text and user input are displayed in this way.

Ex. Type `ustation` to start MicroStation.

KEYS

All keystrokes and mouse presses.

For example, press <ENTER> to get to the next field.

[Menu Item]

Highlights menu selections.

For example, select **[Database - Searches]** to work with the database information.

Snap buttons

This is used to mark push buttons.

Ex. Press Ok to exit

Keywords

Keywords are displayed in italics.

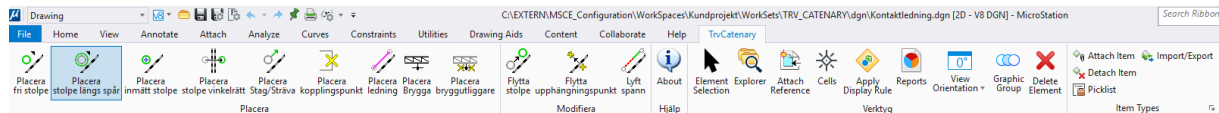
For example, these characters are called *wildcards*.

Tips or other important paragraphs are highlighted in italics within a frame.

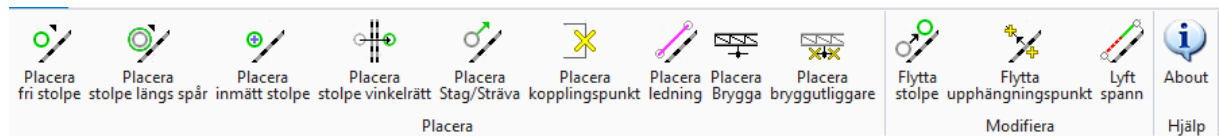
Introduction

The functions of TrvCatenary are automatically activated when MicroStation starts with a WorkSpace where TrvCatenary is installed.

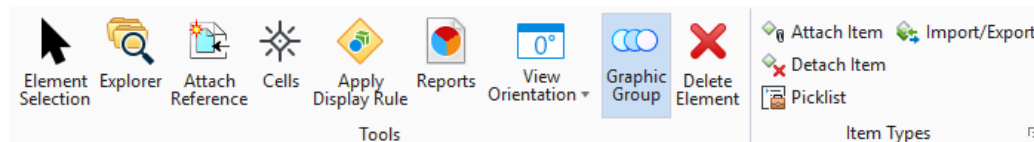
All functions are located in the TrvCatenary menu which is located under **[Workflow: Drawing]**.



The *Place* and *Modify* ribbon groups provides features for creating and editing catenary objects.



The other ribbon groups contain useful standard functions.



Attribute data

All attribute data is stored as *Item Types*. ItemTypes is MicroStation's preferred way to handle non-graphical attributes. This makes it possible to use many of the built-in features of MicroStation to create *reports*, use *Display Rules*, place *text fields*, and *search for information* in the model using the *Explorer dialog*.

By adding properties for different Item Types (Posts, Cantilevers, etc.), the users can add their own attributes that are relevant for the project.

Cells

TrvCatenary uses a slightly customized version of the Swedish Transport Administration's cell library *KTL.cel*. Levels and symbology follow the Swedish Transport Administration's TDOK 2019:0215.

Levels

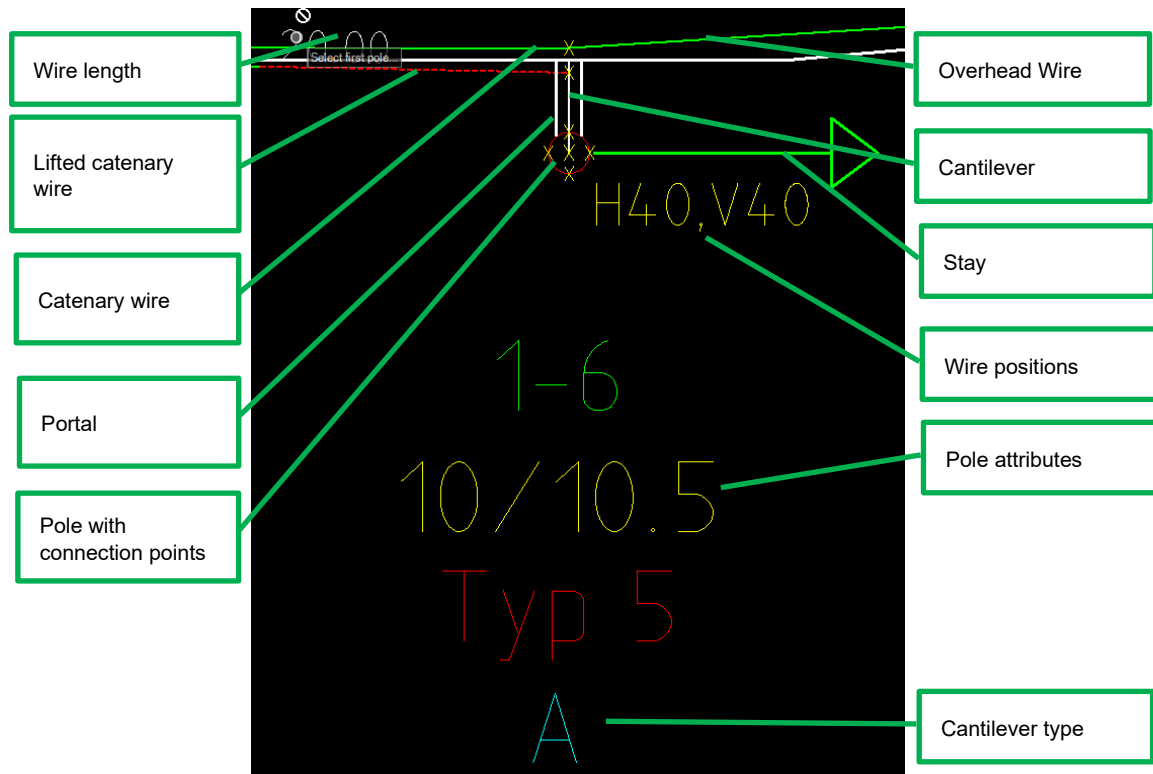
Levels and symbology follow the Swedish Transport Administration's Ktl_F.csv and Ktl_P.csv

Undo

All commands can be undone by selecting *Undo* (Ctrl+Z).

Components

The image shows the various components used by TrvCatenary.



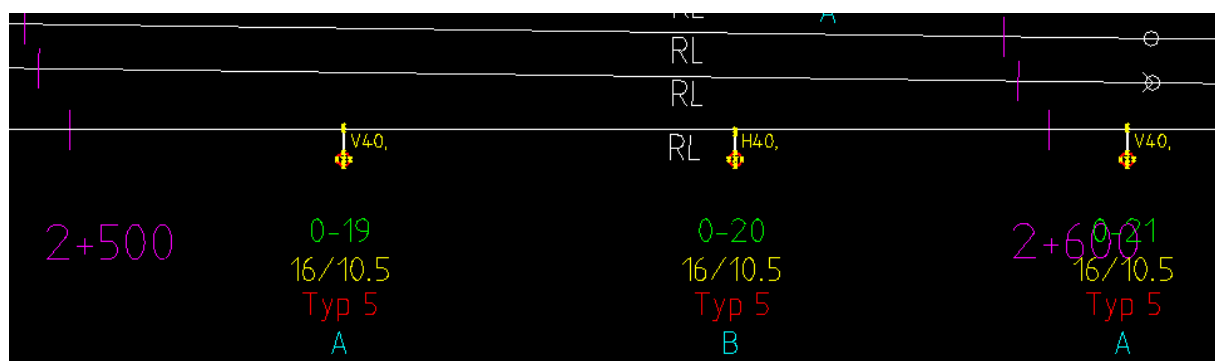
The Wire positions and the Cantilever type belong to the cantilever cell, the pole and the other text belong to the pole cell.

The cell names for the poles, cantilevers and stays are defined in the file *TRVCATENARY_Setting.xlsx* ([see Appendix B](#)).

Track direction

TrvCatenary assume that all track geometries are created in the main direction of the track. The track direction will decide on which side of the track the objects are places.

The program assumes the view is rotated so the track direction is from left to right.



Place free pole



This command is used to place a new pole at a distance from a selected point.

The dialog box

Km	The distance from track start reference point.
Pole number	A sequential number within each Km. This is set automatically to the next number within the current Km but can be changed by the user.
Suffix	An additional letter for poles on the opposite side of the track.
Pole type	The type of pole. Select a value from the list.
Pole dimension	The type of pole. Select a value from the list.
Existing	NOT USED
Foundation type	The type of foundation. Select a value from the list.
Cant. type	The type of cantilever. Select a value from the list.
Cant.nr	An optional cantilever number
Status	Cantilever status. Select a value from the list.

Span length	The distance from the selected start point to the new pole.
Offset	The poles orthogonal distance from the track.
Number	A number greater than 1 will place multiple poles with the same values. Side and wire position might be changed automatically. See the tab Automation.
Side 1	The side for the first wire position. Select a value from the list.
WP 1	The distance from the track center line for the first wire position.
Side 2	The side for the second wire position. Select a value from the list.
WP 2	The distance from the track center line for the second wire position.
Switch WP	NOT USED

Match pole

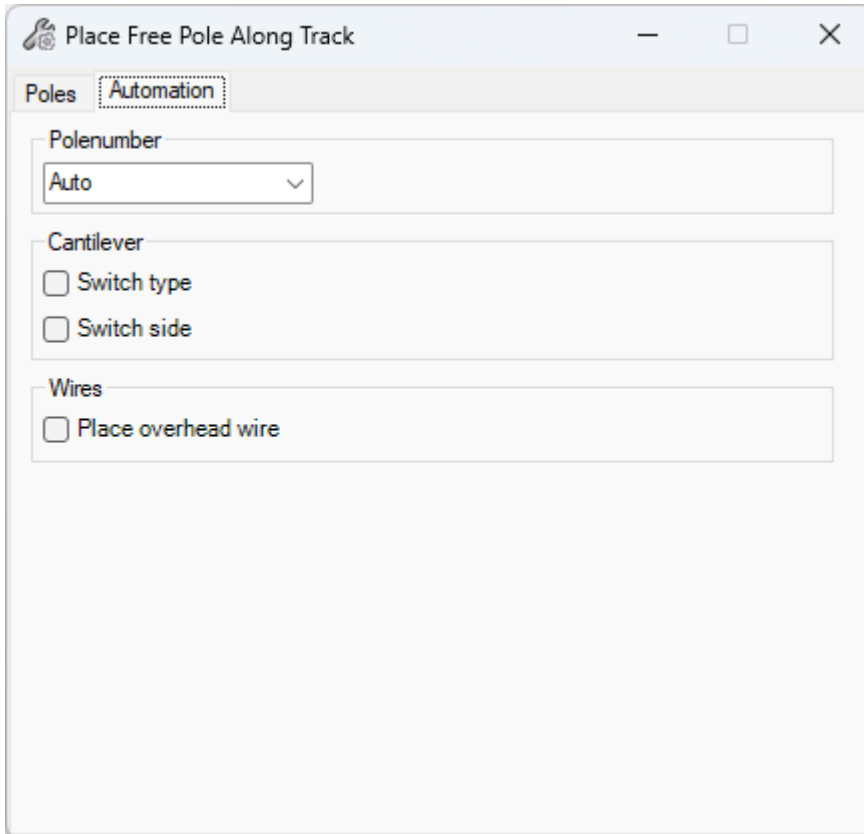


The *Match Pole* icon can be used to initiate the form by matching values from a selected pole.

Workflow

1. Fill in the required values or match an existing pole.
The span length and side position must always be greater than 0.
2. Select the element that marks the starting point.
3. Select the track geometry near the starting point.
A circle with the specified span length is now displayed.
4. Select a track geometry where the circle intersects the track on either side of the pole.
If multiple poles should be placed, additional track geometries can be selected by using CTRL+DATA.
5. Accept the endpoint on the desired side of the track.

Automation



The screenshot shows a software dialog box titled "Place Free Pole Along Track". It has a tabbed interface with two tabs: "Poles" and "Automation". The "Automation" tab is currently selected. Inside this tab, there are three sections, each with a title and a list of options:

- Polenumber**: A dropdown menu showing "Auto".
- Cantilever**: Two checkboxes, "Switch type" and "Switch side", both of which are unchecked.
- Wires**: One checkbox, "Place overhead wire", which is unchecked.

Under the Automation tab, the user can specify which values should be updated automatically when placing multiple poles.

The automation values are used both when placing multiple poles at once (Number > 1) and when placing multiple poles in sequence (Number = 1).



Place pole along track



This command is used to place a new pole at a specified distance from an existing pole.

The dialog box

See [Place free pole](#) for the individual parameters.

Match pole



The *Match Pole* icon can be used to initiate the form by matching values from a selected pole.

Workflow

1. Fill in the required values or match an existing pole.
The span length and side position must always be greater than 0.
2. Select an existing pole as the start point.

3. Select the track geometry near the starting point.
A circle with the specified span length is now displayed.
4. Select a tracks geometry where circle intersect the track on either side of the pole.
If multiple poles should be placed, additional track geometries can be selected by using CTRL+DATA.
5. Accept the endpoint on the desired side of the track with a DATA POINT.

Place pole at point



This command is used to place a new pole at the position of an existing element.

The dialog box

See [Place free pole](#) for the individual parameters.

Match pole



The *Match Pole* icon can be used to initiate the form by matching values from a selected pole.

Workflow

1. Fill in the required values or match an existing pole.
2. Select the element where the pole should be placed.

3. Select the track geometry near the starting point.
4. Accept the pole with a DATA POINT.

Place pole orthogonal



This function is used to place a new pole perpendicular to the opposite side of the specified track.

The dialog box

See [Place free pole](#) for the individual parameters.

Match pole

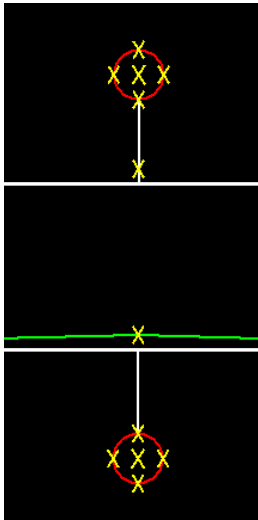


The *Match Pole* icon can be used to initiate the form by matching values from a selected pole.

Workflow

1. Fill in the required values or match an existing pole.
2. Select an existing pole.
3. Select the track geometry near the selected pole.
A line orthogonal to the track is displayed.

4. Select a track that intersects the line for the new pole position.



Place Cantilever



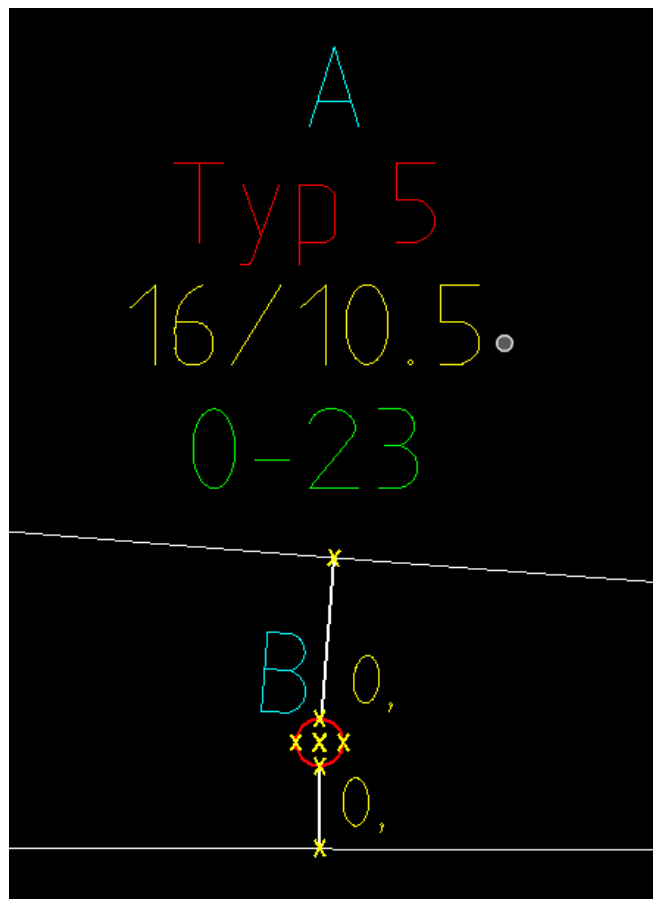
The command is used to add a cantilever to an existing pole. If the pole already has a cantilever a second cantilever can be added by selecting a track on the opposite side from the first cantilever.

The dialog box

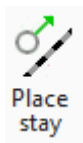
Cant. Type	Type of cantilever. Select a value from the list.
Cant. Number	An optional cantilever number.
Status	Status. Select a value from the list.
Side 1	Side of catenary wire for first WP. Select a value from the list.
WP 1	Distance from catenary wire for first WP.
Side 2	Side of catenary wire for the second WP. Select a value from the list.
WP 2	Distance from catenary wire for the second WP.

Workflow

1. Select type of cantilever.
The second wire position is disabled for some cantilever types.
2. Enter values.
3. Select a pole with a DATA POINT.
4. Select the track with a DATA POINT.
5. Accept the position with a DATA POINT.



Place stay



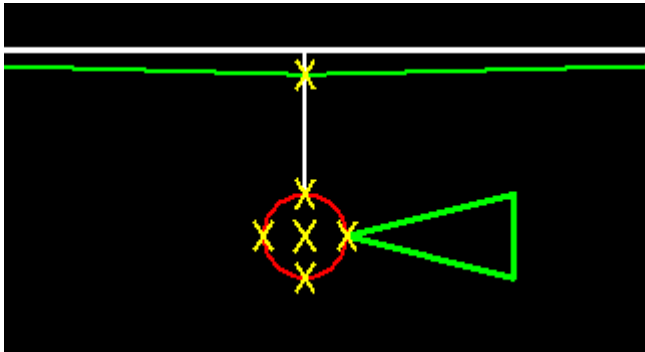
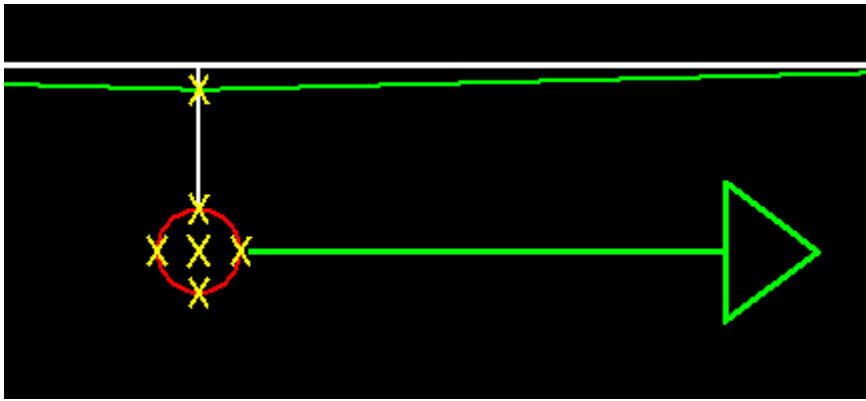
This command is used to place a new stay on an existing pole.

The dialog box

Stay	Type of stay. Select a value from the list.
Existing foundation	
Foundation	Type of foundation. Select a value from the list.
Status	Status. Select a value from the list.
Stay1	Stay distance. This value is set from the selected stay.
Stay 2	Secondary stay distance. This value is set from the selected stay.
Pole distance	If checked, the stay track offset will be the same as the pole, otherwise the value Foundation distance will be used.
Foundation distance	The foundation track offset.

Workflow

6. Fill in the required values.
7. Select an existing pole.
8. Select the track geometry near the selected pole.
9. Enter a DATA POINT to select the stay side of the pole.



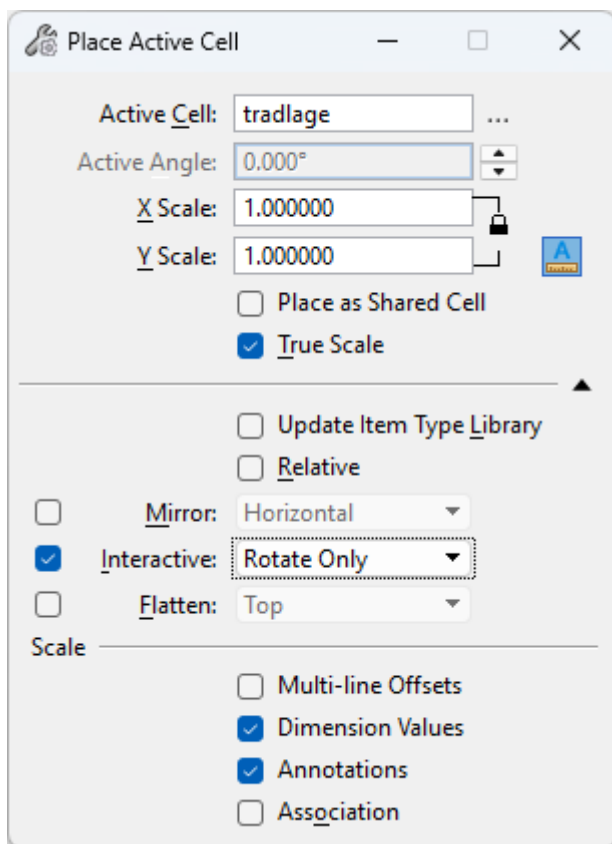
Place connection point



This command is used to place a new connection point at any position.

The command uses the standard MicroStation *Place Active Cell* command to place a new connection point cell.

The dialog box



Workflow

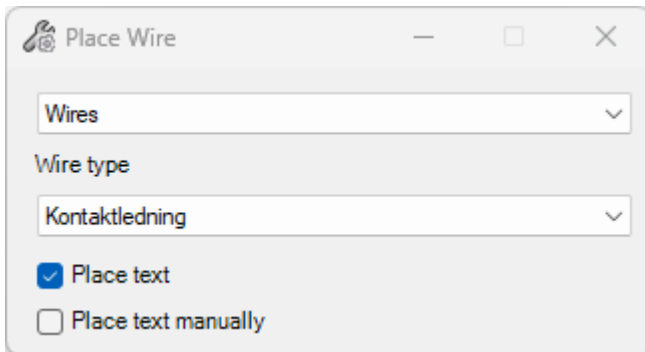
1. Expand the dialog box and verify that the settings are the same as in the image.
2. Enter a DATA POINT to place the cell.
3. Use the mouse to rotate the cell and enter a second DATA POINT to place the cell.

Place Wire



This command is used to place a new wire or cable.

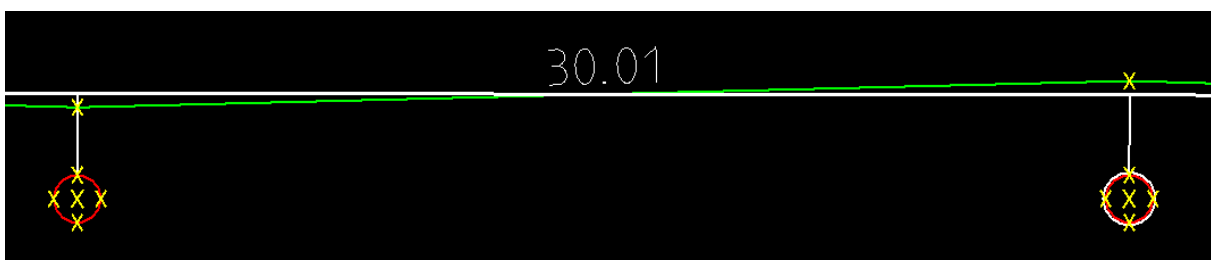
The dialog box



Wire/Cable	Select Wire or Cables
Wire Type	The type of the Wire or Cable The list updates depending on the previous selection.
Place text	If this option is checked the length of the wire is also placed.
Place text manually	If this option is checked, the user must enter a second data point to position the text.

Workflow

1. Select type of wire or cable from the list.
Optionally, select to place text.
2. Select the first connection point.
3. Enter new break points or select the second connection point to finish the command.
The command will restart using the last point as the start point.

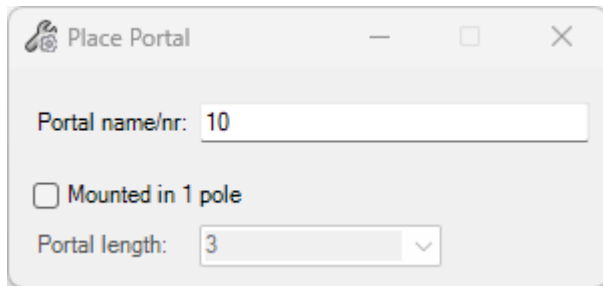


Place Portal



This command is used to place a new portal.

The dialog box

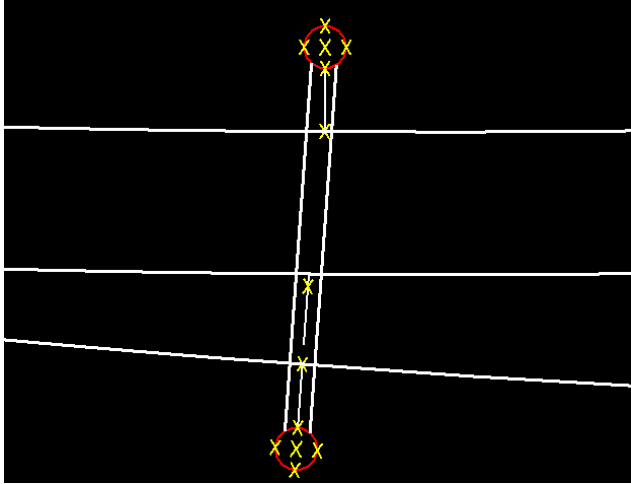


Portal name/nr	The name or number for the portal
Mounted in 1 pole	The portal is mounted to a single pole. The user must also select the length of the portal.
Portal length	A predefined number of portal lengths.

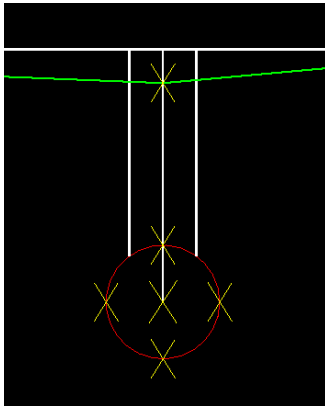
Workflow

1. Enter the name for the portal.
2. Optionally, select if the portal is connected to one pole only.
If checked, select the length of the portal from the list.
3. Select the first pole.
4. Select the second pole.
or
Select the track close to the pole if the portal is connected to one pole.
5. Accept the portal with a DATA POINT.

Portal between two poles



Portal mounted in one pole



Place Portal Cantilever



This command is used to place a new portal cantilever.

The dialog box

Side 1	The wire position side of the track for the first wire position.
WP 1	The distance of the first wire position.
Side 2	The wire position side of the track for the second wire position.
WP 2	The distance of the first wire position.
Type	The type of cantilever. This selection will enable or disable the second wire position.
Number	An optional cantilever number.

Workflow

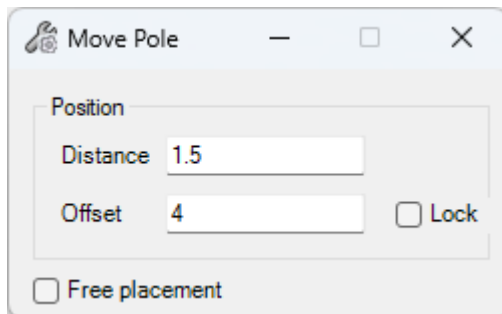
1. Select the portal.
2. Select the track where the cantilever should be placed.
3. Accept the placement with a DATA POINT at the side where the cantilever should be placed.

Moving pole



This command is used to move an existing pole.

The dialog box



Distance	The distance to move the pole. If the distance is 0 the pole will just be moved using the offset.
Offset	The pole distance from the track. This value is only used if Lock is checked, otherwise the original pole offset is used.
Lock	Check this to use the new offset value.
Free placement	If checked, the user can move the pole dynamically to select a new position.

Workflow

1. Select the pole.
2. Select the track close to the pole.
If Free placement is NOT checked a circle is displayed otherwise a line is displayed at the cursor.
3. Select the new pole position.

Set wire position



This command is used to move, add and delete wire positions.

The dialog box

Cantilever type	The type of cantilever.
Side	The side of the new wire position.
Wire position	The distance from the track for the new wire position.
Status	Read-only information

Workflow

1. Identify a pole with a DATA POINT.
The dialog shows all wire positions attached to the pole.
2. Optionally, change the type of cantilever.
The number of wire points is updated to reflect the cantilever type.
3. Optionally, click the + button to add a new wire position.
4. Update the side or distance.
5. Identify the track related to the cantilever.
6. Accept the result with a DATA POINT.

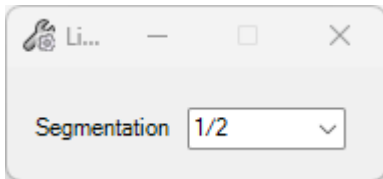
If more than two wire positions are added to a pole, the annotation text must be updated manually.

Lift span



This command is used to lift a catenary span at the end of a catenary section.

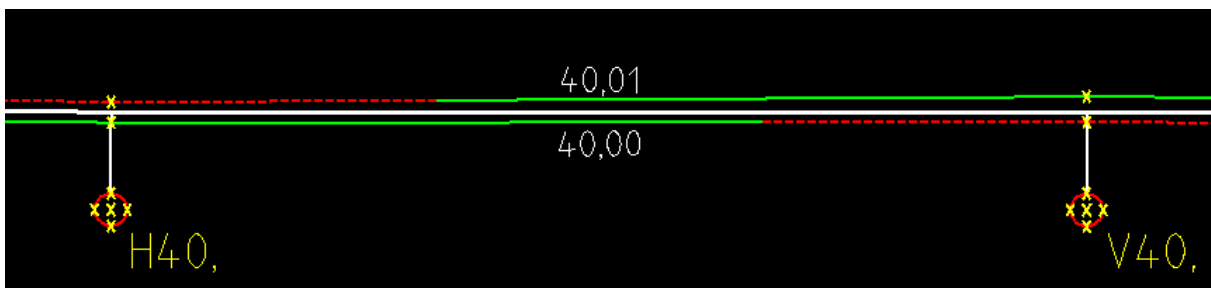
The dialog box



Segmentation	Segmentation governs at what point the wire should be lifted.
--------------	---

Workflow

1. Select the wire to lift at the side of the lift.
2. Accept the new lift with a DATA POINT.
The wire is split into two parts, and the lifted part will get a new symbology.

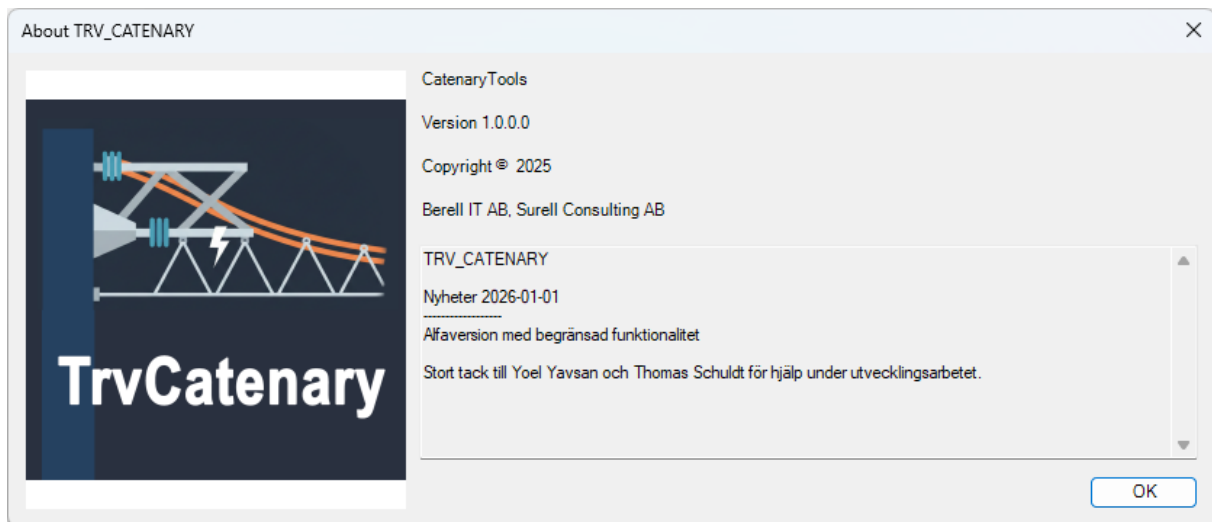


About the program



This command is used to display information about the application.

The dialog box



Help

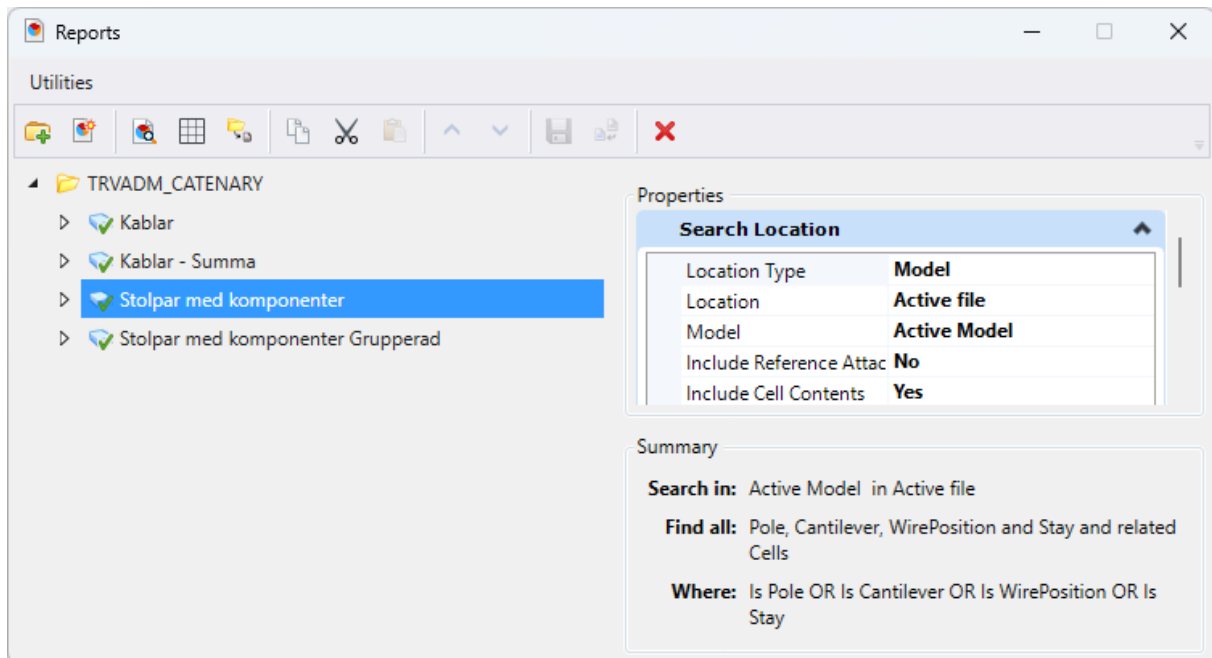


This command is used to open the PDF documentation.

Reports

This command is used to open the report dialog.

The dialog box



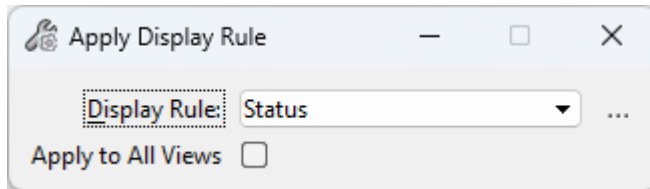
The Preview window displays a table of search results for 'Stolpar med komponenter'. The table has 15 columns: Component, Stolpe ID, X, Y, Stolpnummer, Stolptyp, Stolpdimension, Stolpfundament, Stolpe sidoläge, Stolpe Sida, Stolpstatus, Utliggare Typ, Utliggare Status, and TL 1. The table contains 51 rows of data, including components like Stolpe, Utliggare, Trådläge, and Stag. The bottom of the window shows 'Rows: 51'.

Component	Stolpe ID	X	Y	Stolpnummer	Stolptyp	Stolpdimension	Stolpfundament	Stolpe sidoläge	Stolpe Sida	Stolpstatus	Utliggare Typ	Utliggare Status	TL 1
Stolpe	119939	153540.070	6579080.684	1-2	Normal	10/10.5	Typ 5	3.35	H	Ny			
Utliggare	119939	153540.070	6579080.684								B	Befintlig	H40
Trådläge	119939	153541.850	6579082.449										
Stag	119939	153533.031	6579087.787										
Stolpe	123422	153596.106	6579023.588	1-4	Normal	12/11.5	Typ 6	3.35	H	Justeras			
Utliggare	123422	153596.106	6579023.588								B	Rivas	H40
Trådläge	123422	153597.957	6579025.414										
Stolpe	134773	153839.358	6579022.803	1-2	Normal	10/10.5	2xTyp 5	3.35	H	Befintlig			
Utliggare	134773	153839.358	6579022.803								A	Ny	0
Trådläge	134773	153835.918	6579021.463										
Stolpe	134827	153835.431	6578980.625	1-2	Normal	10/10.5	2xTyp 5	3.35	H	Befintlig			
Utliggare	134827	153835.431	6578980.625								A	Ny	H40
Trådläge	134827	153833.124	6578981.820										
Stolpe	156731	153570.246	6579050.051	1-3	Normal	10/9.0	Typ 6	3.35	H	Ny			
Utliggare	156731	153570.246	6579050.051								A	Befintlig	V40
Trådläge	156731	153572.647	6579052.402										
Stolpe	158479	153626.342	6578992.031	1-6	Normal	10/10.5	Typ 5	3.35	H	Befintlig			
Utliggare	158479	153626.342	6578992.031								A	Befintlig	H40
Trådläge	158479	153628.220	6578993.829										
Stolpe	161194	153621.467	6579015.053	1-5a	Normal	10/10.5	Typ 6	4.58	V	Befintlig			
Utliggare	161194	153621.467	6579015.053								A-växel	Befintlig	0
Trådläge	161194	153618.595	6579012.012										
Trådläge	161194	153618.320	6579011.722										
Stolpe	161194	153620.498	6579011.011	1-6	Normal	10/11.5	Typ 6	3.35	H	Justeras			

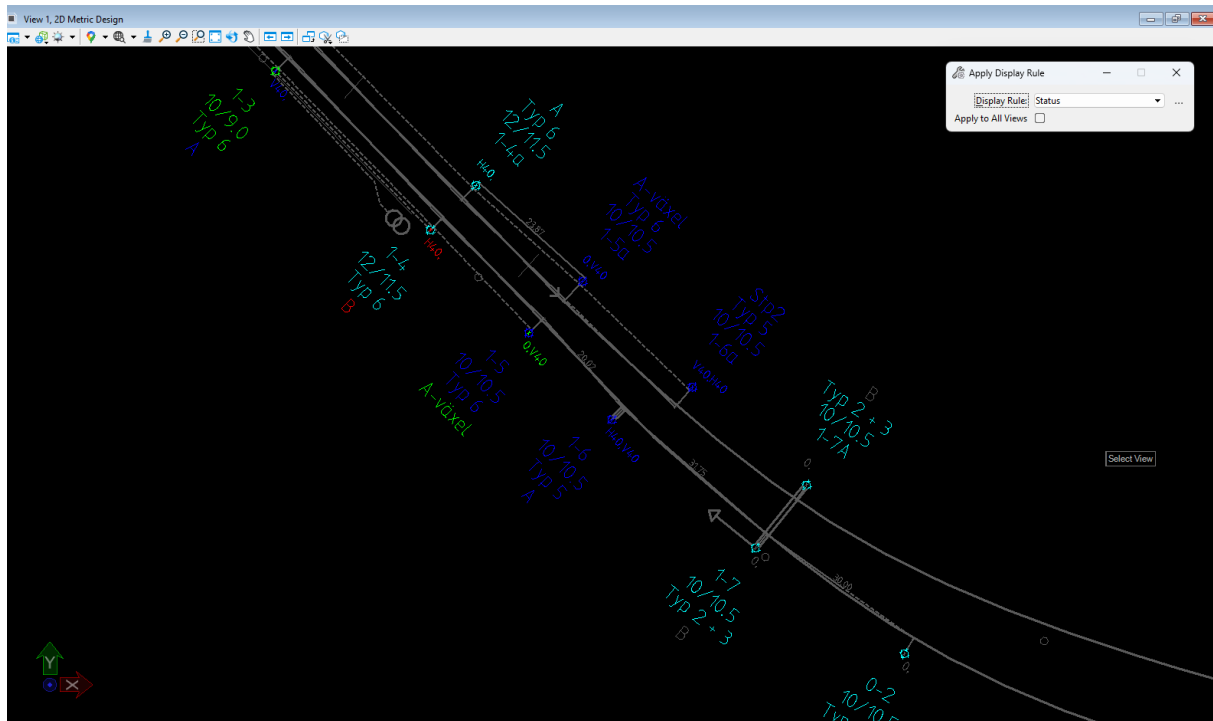
Display Rules

This command is used to enable a *Display Rule* in the desired view.

The dialog box



Display Rules can be used to change the element symbology for different purposes. The example shows how the property Status has been used to for the display (new, existing, remove etc).



Appendix A

Sample configuration

The following example shows what the standard *TrvCatenary.cfg* WorkSet configuration file looks like.

If the application is running in a ProjectWise environment with Managed WorkSpaces, the settings may be customized as needed.

```
_USTN_WORKSETROOT = $_USTN_WORKSETSROOT)$_USTN_WORKSETNAME)/
_USTN_WORKSETSTANDARDS = $_USTN_WORKSETROOT)Standards/
_USTN_WORKSETDGNS = $_USTN_WORKSETROOT)Dgn/
_USTN_OUT = $_USTN_WORKSETROOT)out/

TRVCAT_EXEPATH = $_USTN_WORKSETSTANDARDS)Mdlapps/

# Changing language code will change menus, dialogboxes and prompts.
# Excel need to be updated manually.
# Valid codes are: _sv, _en
TRVCAT_LANGUAGE = _en

ITEMTYPE_PICKLIST_EXCELPATH =
$_USTN_WORKSETSTANDARDS)Data/TRVCATENARY_Settings.xlsx

ITEMTYPE_LOOKUP = $_USTN_WORKSETSTANDARDS)Data/TRVCATENARY_Settings.xlsx

MS_GUIDGNLIBLIST <
$_USTN_WORKSETSTANDARDS)Dgnlib/GUI/$(TRVCAT_LANGUAGE)/GUI$(TRVCAT_LANGUAGE)
).dgnlib

MS_DATA = $_USTN_WORKSETSTANDARDS)Data/

# Load addins
MS_ADDINPATH < $(TRVCAT_EXEPATH)

MS_DGNAPPS > CatenaryTools
```

Appendix B

Most settings in TrvCatenary are set in an Excel file called *TRVCATENARY_Settings.xlsx*. This file is used to store PickLists, Lookups and other settings used by the program.

The file location is stored in the configuration variable ITEMTYPE_PICKLIST_EXCELPATH set by the WorkSpace.

The file contains the following tabs. All tabs except Settings need to have an entry in the first column *PickList.Name*.

The title of the columns may not be changed!

PickLists

This tab contains general picklists used by the program.

Not all values are shown in the image.

	A	B	C	D	E	F	G
1	PickList.Name	Status	PolePosition	WirePosition	PoleDimension	FoundationType	PortalDistances
2	PickList.Value1	-	H	-	-	-	3
3	PickList.Value2	Befintlig	V	H	10/9.0	Typ Bef	5
4	PickList.Value3	Ny		V	10/10.5	Typ S	7
5	PickList.Value4	Rivas			10/11.5	Typ 2	
6	PickList.Value5	Justeras			12/8.1	Typ 3	
7	PickList.Value6				12/10.5	Typ 3	
8	PickList.Value7				12/11.5	Typ 5	
9	PickList.Value8				14/7.6	2xTyp 5	
10	PickList.Value9				14/8.1	Typ 6	
11	PickList.Value10				14/9.4	Typ 1 + 3	
12	PickList.Value11				14/10.5	Typ 2 + 3	

Poles

This tab contains pole specific information.

Not all values are shown in the image.

	A	B	C	D	E	F	G
1	PickList.Name	PoleType	Cellname	Cellname3D	Radius	PortalOffset	Value3
2	PickList.Value1	Normal	STDS	STOLPE_3D	0,675	0,544	0,75
3	PickList.Value2	Normal utan ben	NO_CELL		0,75	0,544	0,75
4	PickList.Value3	3 ben	NO_CELL		0,6	0,544	0,6947
5	PickList.Value4	3 ben utan km	STTUK	STOLPE_3D	0,54	0,54	0,6947
6	PickList.Value5	Omvriden	STO	STOLPE_3D	0,405	0,405	1
7	PickList.Value6	Omvriden utan km	NO_CELL		0,405	0,405	1
8	PickList.Value7	SugTrafo	STFS	STOLPE_3D	0.729	0	1
9	PickList.Value8	SugTrafo utan km	NO_CELL		1	0	0,25
10	PickList.Value9	Tunnelståndare	STTU	STOLPE_3D	0,225	0	0,25

PoleType

The name of a specific pole type.

Used in many picklists.

Cellname

The 2D cellname used to represent the pole in the model.

These cells should have the ItemType Pole attached and text fields for any property that should be displayed along with the pole.

Cellname3D

The 3D cellname used if the user selected to place a 3D cell.

Radius

Pole radius.

PortalOffset

The offset used by the Place Portal command to make sure the portal lines connect to the pole.

Value3

Not used.

Cantilevers

This tab contains cantilever specific information.

Not all values are shown in the image.

	A	B	C	D	E
1	PickList.Name	CantileverType	Cellname	Cellname3D	WirePositions
2	PickList.Value1	-	?	?	0
3	PickList.Value2	A-växel	UTLS	Utliggare_3D	2
4	PickList.Value3	B-växel	UTLS	Utliggare_3D	2
5	PickList.Value4	A	UTLS	Utliggare_3D	1
6	PickList.Value5	B	UTLS	Utliggare_3D	1
7	PickList.Value6	C	UTLS	Utliggare_3D	2
8	PickList.Value7	D	UTLS	Utliggare_3D	2
9	PickList.Value8	E	UTLS	Utliggare_3D	2
10	PickList.Value9	F	UTLS	Utliggare_3D	2
11	PickList.Value10	Stp1	UTLS	Utliggare_3D	2

CantileverType

The name of a specific cantilever type.

Used in many picklists.

Cellname

The 2D cellname used to represent the cantilever in the model.

These cells should have the ItemType Cantilever attached and text fields for any property that should be displayed along with the pole.

Cellname3D

The 3D cellname used if the user selected to place a 3D cell.

WirePositions

The number of wire positions used by this cantilever type.

Stay

This tab contains stay specific information.

Not all values are shown in the image.

	A	B	C	D	E	F
1	PickList.Name	StayName	StayType	Cellname	Value	Distance
2	PickList.Value1	Enkel stag	1	DSTAG1	Enkellina	10,00
3	PickList.Value2	Dubbel stag (2 fund.)	1	DSTAG21,DSTAG22	Enkellina	10,00
4	PickList.Value3	Dubbla staglinor (1 fund.)	1	DSTAG3	Dubblatinor	10,00
5	PickList.Value4	Sträva 2.18m (Brygga)	2	T_SRV1	-18B1	2,18
6	PickList.Value5	Sträva 2.15m (Linje)	2	T_SRV2	-18L1	2,15
7	PickList.Value6	Sträva 1.92m (Brygg)	2	T_SRV3	-18B2	1,92
8	PickList.Value7	Sträva 1.92m (Linje)	2	T_SRV4	-18L2	1,92
9	PickList.Value8	Bakstag	1	DSTAG4	Bakstag	5,00

StayName

The name of a specific stay type.

Used in many picklists.

Cellname

The 2D cellname used to represent the stay in the model.

These cells should have the ItemType Stay attached and text fields for any property that should be displayed along with the pole.

Value

Additional information used by the program.

The values that starts with – will be appended to the pole dimension when the stay is attached to a pole.

Distance

The length of the stay.

Foundation

This tab contains foundation specific information.

Not all values are shown in the image.

	A	B	C
1	PickList.Name	FoundationType	Cellname3D
2	PickList.Value1	-	
3	PickList.Value2	Typ Bef	FUNDAMENT_3D
4	PickList.Value3	Typ S	FUNDAMENT_3D
5	PickList.Value4	Typ Bef	FUNDAMENT_3D
6	PickList.Value5	Typ 2	FUNDAMENT_3D
7	PickList.Value6	Typ 3	FUNDAMENT_3D
8	PickList.Value8	Typ 5	FUNDAMENT_3D
9	PickList.Value9	2xTyp 5	FUNDAMENT_3D
10	PickList.Value10	Typ 6	FUNDAMENT_3D

FoundationType

The name of a specific foundation type.

Used in many picklists.

Cellname3D

The 3D cellname used if the user selected to place a 3D cell.

Wires

This tab contains wire specific information.

Not all values are shown in the image.

	A	B	C	D	E
1	PickList.Name	FreeWires	WireLevelName	Cables	CableLevelName
2	PickList.Value1	Kontaktledning	Kontaktledning L	Återledning	Återledning Kabel L
3	PickList.Value2	Kontaktledningsavspänning	Kontaktledningsavspänning L	Hjälpkraftledning	Hjälpkraftledning Kabel L
4	PickList.Value3	Återledning	Återledning Friledning L	Förstärkningsledning	Förstärkningsledning Kabel L
5	PickList.Value4	Hjälpkraftledning	Hjälpkraftledning Friledning L	Förbi- matarledning	Förbi-matarledning Kabel L
6	PickList.Value5	Förstärkningsledning	Förstärkningsledning Friledning L	AT-ledning	AT-ledning Kabel L
7	PickList.Value6	förbi- matarledning	Förbi-matarledning Friledning L	Längsgående jordledare	Längsgående jordlina Kabel L
8	PickList.Value7	BT-system flera ledare	BT-system Flera ledare L	Samlingsjordledare	Samlingsjordledare Kabel L
9	PickList.Value8	AT-ledning	AT-ledning Friledning L	Tvårförbindning	Tvårförbindning Lina L
10	PickList.Value9	AT-system flera ledare	AT-system flera ledare L	Tågvärme	Tågvärmekabel L

FreeWires

Name of the different wire types.

Used in picklists.

WireLevelName

The level name for the specific wire type.

Cables

Name of the different cable types.

Used in picklists.

CableLevelName

The level name for the specific cable type.

Settings

This tab contains general settings used by the program.

Not all values are shown in the image.

	A	B
1	Setting	Value
2	LEVEL_CANTILEVER	Utliggare P
3	LEVEL_WIRE_TEXT	Spannlängd T
4	LEVEL_WP_FREE	Kopplingspunkt P
5	LEVEL_WP_OUTLET	Uttag CPT T
6	LEVEL_WP_WIREPOSITION	Trådläge P
7	LEVEL_PORTAL	Kontaktledningsbrygga L
8	LIFT_WIRE_NAME	Kontaktledningsavspänning
9	FOUNDATION_EXISTING	Typ Bef
10	PORTAL_CANTILEVER_CELL	UTLB

Setting

Name of the setting.

May NOT be changed!

Value

Setting value.

Appendix C

Language adaptation

TrvCatenary can be customized for different languages. On delivery, Swedish and English are supported.

To select the language, change the following configuration variable:

```
TRVCAT_LANGUAGE = _en
```

The value can be `_sv` or `_en`.

This option controls the language of menus and dialog boxes.

If you also want to change the language or values for the pick lists, the file must *TRVCATENARY_Settings.xlsx* be edited.

Note that this file cannot be replaced in an existing project as this affects valid values for all attributes.

Appendix D

This appendix contains translation for the terms used in this document.

English	Svenska	Danska
Pole	Stolpe	
Cantilever	Utliggare	
Wire position	Trådläge	
Stay	Stag	
?	Sträva	
Connection point	Kopplingspunkt	
Portal	Brygga	
Portal cantilever	Bryggutliggare	
Lift span	Lyft kontaktledning	