

Autodesk® Topobase™ Web User's Guide

Autodesk® Topobase™ Web User's Guide

Autodesk®

© 2009 Autodesk, Inc. All Rights Reserved. Except as otherwise permitted by Autodesk, Inc., this publication, or parts thereof, may not be reproduced in any form, by any method, for any purpose.

Certain materials included in this publication are reprinted with the permission of the copyright holder.

Trademarks

The following are registered trademarks or trademarks of Autodesk, Inc., in the USA and other countries: 3DEC (design/logo), 3December, 3December.com, 3ds Max, ADI, Alias, Alias (swirl design/logo), AliasStudio, AliasWavefront (design/logo), ATC, AUGI, AutoCAD, AutoCAD Learning Assistance, AutoCAD LT, AutoCAD Simulator, AutoCAD SQL Extension, AutoCAD SQL Interface, Autodesk, Autodesk Envision, Autodesk Insight, Autodesk Intent, Autodesk Inventor, Autodesk Map, Autodesk MapGuide, Autodesk Streamline, AutoLISP, AutoSnap, AutoSketch, AutoTrack, Backdraft, Built with ObjectARX (logo), Burn, Buzzsaw, CAiCE, Can You Imagine, Character Studio, Cinestream, Civil 3D, Cleaner, Cleaner Central, ClearScale, Colour Warper, Combustion, Communication Specification, Constructware, Content Explorer, Create>what's>Next> (design/logo), Dancing Baby (image), DesignCenter, Design Doctor, Designer's Toolkit, DesignKids, DesignProf, DesignServer, DesignStudio, DesignStudio (design/logo), Design Web Format, Discreet, DWF, DWG, DWG (logo), DWG Extreme, DWG TrueConvert, DWG TrueView, DXF, Ecotect, Exposure, Extending the Design Team, Face Robot, FBX, Filmbox, Fire, Flame, Flint, FMDesktop, Freewheel, Frost, GDX Driver, Gmax, Green Building Studio, Heads-up Design, Heidi, HumanIK, IDEA Server, i-drop, ImageModeler, iMOUT, Incinerator, Inferno, Inventor, Inventor LT, Kaydara, Kaydara (design/logo), Kynapse, Kynogon, LandXplorer, LocationLogic, Lustre, Matchmover, Maya, Mechanical Desktop, Moonbox, MotionBuilder, Movimento, Mudbox, NavisWorks, ObjectARX, ObjectDBX, Open Reality, Opticore, Opticore Opus, PolarSnap, PortfolioWall, Powered with Autodesk Technology, Productstream, ProjectPoint, ProMaterials, RasterDWG, Reactor, RealDWG, Real-time Roto, REALVIZ, Recognize, Render Queue, Retimer, Reveal, Revit, Showcase, ShowMotion, SketchBook, Smoke, Softimage, SoftimageXSI (design/logo), SteeringWheels, Stitcher, Stone, StudioTools, Topobase, Toxik, TrustedDWG, ViewCube, Visual, Visual Construction, Visual Drainage, Visual Landscape, Visual Survey, Visual Toolbox, Visual LISP, Voice Reality, Volo, Vtour, Wire, Wiretap, WiretapCentral, XSI, and XSI (design/logo).

The following are registered trademarks or trademarks of Autodesk Canada Co. in the USA and/or Canada and other countries: Backburner, Multi-Master Editing, River, and Sparks.

The following are registered trademarks or trademarks of MoldflowCorp. in the USA and/or other countries: Moldflow, MPA, MPA (design/logo), Moldflow Plastics Advisers, MPI, MPI (design/logo), Moldflow Plastics Insight, MPX, MPX (design/logo), Moldflow Plastics Xpert.

All other brand names, product names or trademarks belong to their respective holders.

Disclaimer

THIS PUBLICATION AND THE INFORMATION CONTAINED HEREIN IS MADE AVAILABLE BY AUTODESK, INC. "AS IS." AUTODESK, INC. DISCLAIMS ALL WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE REGARDING THESE MATERIALS.

Published by:
Autodesk, Inc.
111 McInnis Parkway
San Rafael, CA 94903, USA

Contents

Chapter 1	Topobase Web User Guide	1
	Introduction	1
	Starting Topobase Web	3
	Using Topobase Web	4
	Navigating in Topobase Web	4
	Using a Basic Layout	4
	Using a Flexible Fusion Layout	7
	Using Document Explorer	12
	Using Display Models	13
	Using Workflow Explorer	14
	Using Electric Explorer	15
	Using Specialized Modules	16
	Using Topobase Wastewater	16
	Using Topobase Electric	18
	Using Topobase Gas	18
	Using Topobase Water	19
	Finding Features in Your Map	20
	Using Position Finder	21
	Using Markup Functions	22
	Redlining	22
	Dimensioning	23
	Reporting and Sharing	24
	Using the Plot Library	24
	Printing Reports	26

Creating Polygon/Line Definition Reports	27
Exporting Feature Data	27
Creating and Editing	29
Creating Features	29
Editing Feature Information	30
Using Templates	30
Construction and Calculation	32
Deleting Features	32
Splitting Lines	33
Adding Labels	33
Performing Intersections	34
Using Data Checker	34
Using Feature Class Forms	35
Using the Feature Class Form Toolbar	35
Updating Records Globally	36
Adding Data Using Reference Records	37
Filtering Data in Feature Class Forms	38
Filtering Techniques	38
Filter Expressions	39
Saving and Reusing Filters	40
Spatial Selection	41
Filtering Related Records	42
Setting Topobase Web Options	42
Setting Application Options	42
Setting Job Options	43
Setting Map Options	43
Setting COGO Options	44
Setting Document Options	45
Setting COGO and Dimensioning Document Options	46
Setting Wastewater Document Options	47
Setting Electric Explorer Document Options	47
Chapter 2 Using Jobs in Topobase Web	49
Navigating Topobase Jobs	49
Using the Job Control	49
Using Job Explorer	50
Using Job Manager	51
Understanding the Job Workflow	52
Creating a Job	53
Defining the Job Perimeter	53
Selecting a Job	54
Undoing Modifications in Jobs	56
Changing the Job State (Job Transition)	57
Managing Job Conflicts	58
Creating a Historical Job View	60

	Leasing a Job	60
Chapter 3	Working with Topologies	63
	Area Topologies and Logical Topologies	63
	Checking Area Topologies	64
	Checking Logical Topologies	66
	Analyzing Network Topologies	67
	Managing Logical Connections	70
Chapter 4	Construction and Calculation	73
	Using Construction Tools	73
	Construction Reference	74
	Construction Toolbar	74
	Navigating the Construction Commands	76
	Construction: General Guidelines	76
	Construction Dialog Boxes and Menus	76
	Constructions: Intersection	78
	Intersection Elements	79
	Intersection Workflow	81
	Constructions: Arc Intersection	82
	Arc Intersection Elements	83
	Arc Intersection Workflow	84
	Constructions: Orthogonal Calculation	85
	Orthogonal Calculation Elements	86
	Orthogonal Calculation Workflow	88
	Constructions: Polar Calculation	89
	Polar Calculation Elements	90
	Polar Calculation Workflow	92
	Constructions: Orthogonal Projection	92
	Orthogonal Projection Elements	93
	Orthogonal Projection Workflow	94
	Constructions: Snap and Trim	95
	Snap and Trim Elements	95
	Snap and Trim Workflow	97
	Constructions: Offset (Line Calculation)	97
	Line Offset Calculation Elements	98
	Line Offset Calculation Workflow	99
	Constructions: Line Processing (Vertices)	99
	Line Processing Workflows (Vertices)	100
	Constructions: Line Processing (Points)	103
	Constructions: Insert Point	104
	Constructions: Extract Point	106
	Constructions: Right Angle Course	107
	Right Angle Course Elements	108
	Right Angle Course Workflow	109

Constructions: Join Lines	110
Join Lines Workflow	110
Constructions: Free Standpoint	111
Free Standpoint Elements	111
Free Standpoint Workflow	113
Constructions: Center	113
Center Elements	113
Center Workflow	114
Constructions: Reports	114
Constructions: Tips and Tricks	115
Chapter 5 Glossary	117
Index	123

Topobase Web User Guide

1

Introduction

Use Autodesk Topobase Web to work with Topobase project data in a web browser.

Your administrator configures Topobase Web to make a set of its functions available. You may be able to view and search only, or you may be able to use much of the functionality available in Topobase Client.

NOTE If your browser blocks content, the help will not display. Be sure to select Allow Blocked Content.

Topobase Web Functions

Topobase Web supports the following functions:

Viewing functions:

- [Finding a location in the map](#) (page 21)
- [Spatial Selection](#) (page 41)
- [Filtering Data in Feature Class Forms](#) (page 38)

Markup functions:

- [Redlining](#) (page 22)
- [Adding dimension or orthogonal marking lines](#) (page 23)

Reporting and sharing functions:

- [Plotting a map](#) (page 24)
- [Generating Polygon/Line reports](#) (page 27)
- [Exporting feature data](#) (page 27)

Feature creation and editing functions:

- [Creating data and geometry](#) (page 29)
- [Viewing and editing feature data](#) (page 30)
- [Using templates](#) (page 30)
- [Using construction and calculation \(COGO\) tools](#) (page 32)
- [Deleting features](#) (page 32)
- [Splitting lines](#) (page 33)
- [Creating labels](#) (page 33)
- [Performing intersections](#) (page 34)
- [Using Topobase acquisition and analysis workflows for maintaining consistency when creating and editing features](#) (page 14)

Job and validation functions:

- Using Topobase jobs for managing versions
- [Using Data Checker](#) (page 34)

The administrator defines display models, styles and themes. You do not need to generate graphics. To update the display, refresh the map.

For information about configuring and administering Topobase Web, see the “Topobase Administrators Guide” and “Topobase Installation and Configuration Guide.”

About Autodesk MapGuide Viewer

Topobase Web is integrated into the Autodesk MapGuide Viewer. Use any operation available with the MapGuide Viewer:

- Zoom in and out

- Pan
- Measure distances
- Create buffer zones around features
- Select features in several ways
- Print the map (including redlines).

For more information, see the MapGuide Viewer help.

About Viewers and Layouts

Topobase uses the AJAX viewer, which requires no extra client software.

Administrators can configure Topobase to use [flexible layouts](#) (page 7) (based on Fusion) or [basic layouts](#) (page 4). Each layout has a distinctive look and feel.

For information about building web layouts, see the Autodesk MapGuide® Studio help.

NOTE Administrators: Topobase Web uses the MapGuide Viewer Task Pane. Do not configure URL For Home Task Displayed In The Task Pane when creating the Topobase layout.

Starting Topobase Web

Start Topobase Web in a browser by entering the URL provided by your administrator, for example, `http://hostname/mapguide2010/tbweb/login.aspx`.

The URL displays the Topobase Web login page, unless your administrator provides additional parameters. Additional parameters can display a specific map, workspace, viewport, or location.

To start Topobase Web

- 1 Open a web browser.
- 2 Enter the URL provided by your administrator.
- 3 If prompted, do the following:
 - Enter your user name and password. Click Login.
 - Click a workspace. Click Open.

For information on the values to provide, see your administrator.

To change your user password

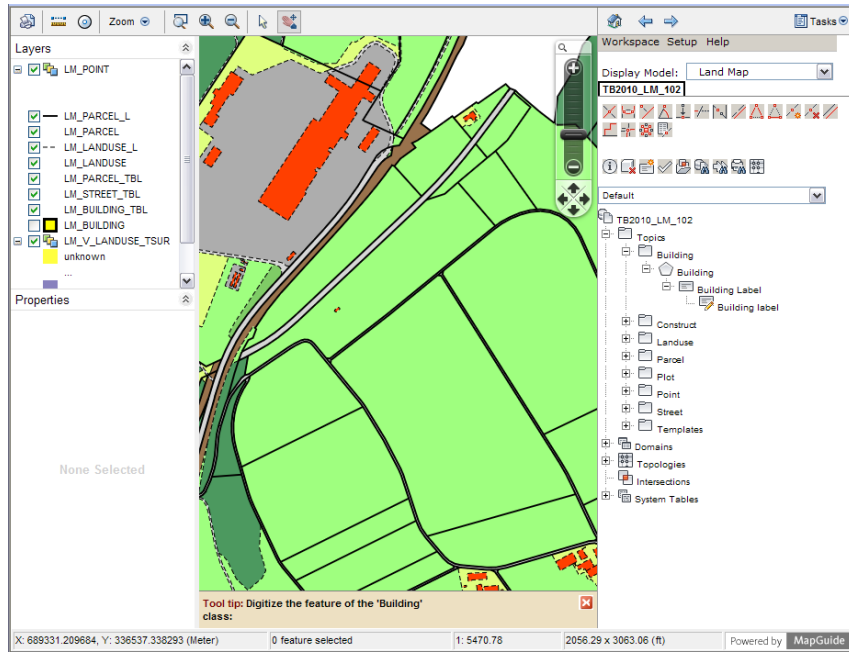
- 1 Log in using your existing password.
- 2 Click Setup ► Change User Password.

Using Topobase Web

Navigating in Topobase Web

Using a Basic Layout

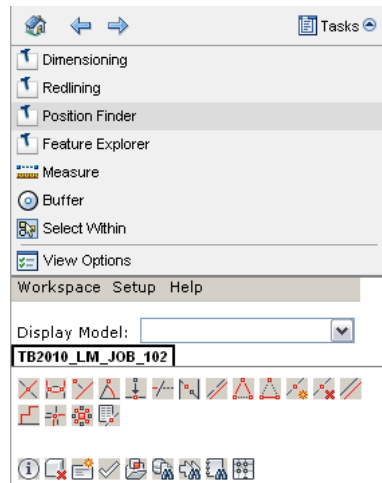
The workspace is defined by your administrator. If your administrator configured Topobase Web with a basic layout, your application window looks something like this:



An example of a basic layout

The layout contains the following areas:

- The Task Pane












Click Tasks to see the Task Pane.

The Task Pane contains the Topobase Web features that your administrator has made available, for example:


- [Position finder](#) (page 21)
- [Dimensioning](#) (page 23)
- [Redlining](#) (page 22)
- [Construction and calculation tools](#) (page 73)









-  [Information](#) (page 30)
-  [Delete Feature](#) (page 32)
-  [Create Label](#) (page 33)
-  [Data Checker](#) (page 34)
-  [Polygon/line definition reports](#) (page 27)

-  [Document Explorer](#) (page 12)
-  [Workflow Explorer](#) (page 14)
-  [Plot Library](#) (page 24)
-  [Connectivity Explorer](#) (if logical topologies are defined). See [Managing Logical Connections](#) (page 70)
- Display model selection. See [Using Display Models](#) (page 13).

Display Model: 

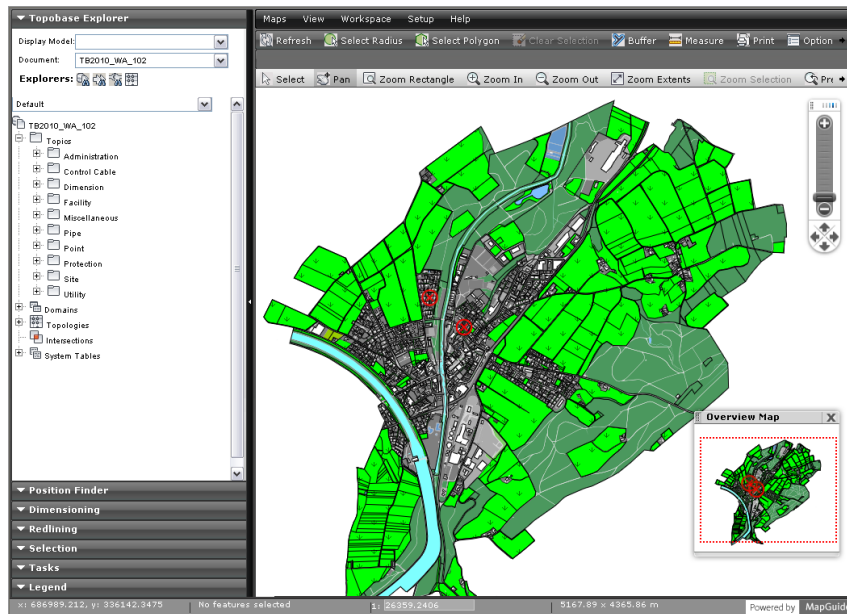
-  [Job Explorer](#) (if jobs are enabled)
- MapGuide commands:

MapGuide provides the following functionality:

-  Zoom in and out
-  Pan
-  Measure distances
-  Create buffer zones around features
-  Select features
-  Print the map (including redlines)

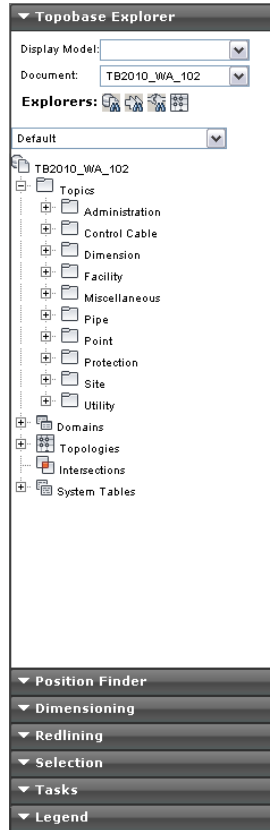
Using a Flexible Fusion Layout

The workspace is defined by your administrator. If your administrator configured Topobase Web with a flexible Fusion layout, your application window looks something like this:






An example of a flexible Fusion layout

The layout contains the following areas:










The Task Pane

The Task Pane contains the Topobase Web features that your administrator has made available, for example:

- Topobase Explorer, which lets you switch between the following:
 -  [Document Explorer](#) (page 12)
 -  [Workflow Explorer](#) (page 14)
 -  [Plot Library](#) (page 24)

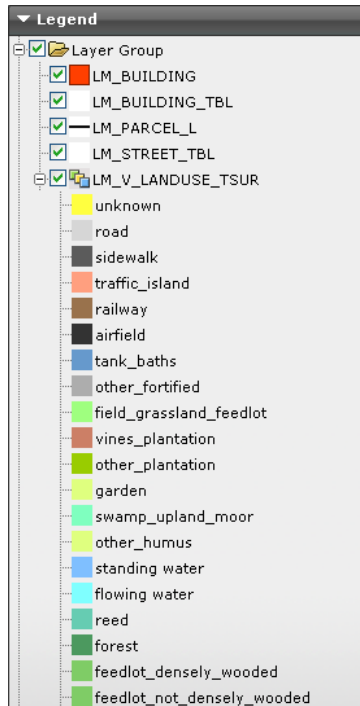
- Display model selection. See [Using Display Models](#) (page 13).

Display Model: 

-  Job Explorer (if jobs are enabled)
-  Connectivity Explorer (if logical topologies are defined). See [Managing Logical Connections](#) (page 70).
- [Position finder](#) (page 21)
- [Dimensioning](#) (page 23)
- [Redlining](#) (page 22)
- At the top of the window are other Topobase Web features that your administrator has made available, for example:
 -  [Feature Information](#) (page 30)
 -  [Delete Feature](#) (page 32)
 -  [Create Label](#) (page 33)
 -  [Data Checker](#) (page 34)
 -  [Polygon/line definition reports](#) (page 27)
 - [Construction and calculation tools](#) (page 73)



- Map Guide commands, including:
 - Selection
 - Tasks
 - Legend





Use the Legend tab to hide and show layers in the map.

- Zoom in and out

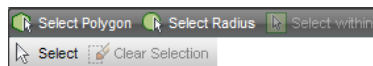



-  Pan

-  Measure distances

-  Create buffer zones around features

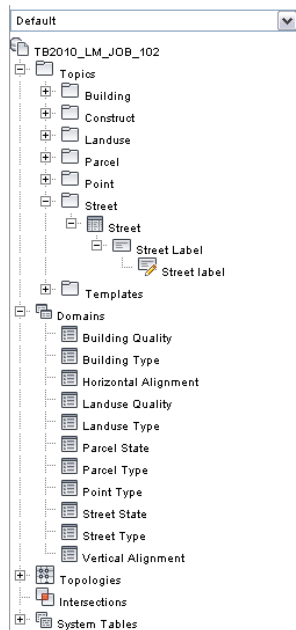
- Select features



-  Print the map (including redlines)

Using Document Explorer

Document Explorer displays the document-specific objects stored in the database. It displays objects in a tree view. Your administrator can define different Document Explorer for each document.




Use Document Explorer to work with objects such as:

- Topics (and feature classes)
- Domains
- Topologies
- Intersections

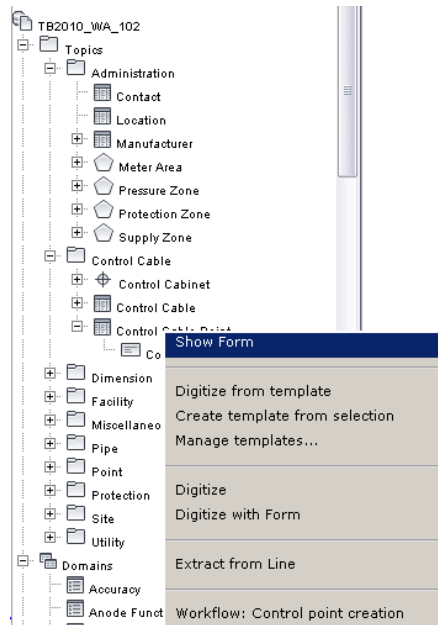
To display Document Explorer

- 1 Display Topobase Explorer.
 - If you use a basic layout, click Tasks ► Topobase Explorer.
 - If you use a flexible Fusion layout, click Topobase Explorer in the Task Pane.

- 2 In Topobase Explorer, click  Document Explorer.

To work with an item in Document Explorer

- 1 Right-click the item.
- 2 Click a command on the menu that displays.



Commands available for the selected item appear on the right-click menu.

Using Display Models

Your administrator provides display models for use in Topobase Web. You can use the same display models as in Topobase Client. For more information about assigning display models for the use in Topobase Web, see the Topobase Administrator User Guide, section Setting Up Topobase Web.

To switch between display models


- In the Topobase Task Pane, under Display Model, select the display model map.

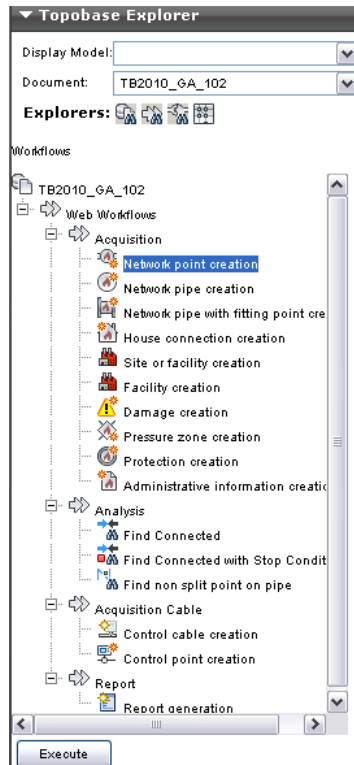
The list shows the display models of the current document, along with the display model maps of each display model. You can only select the display model maps that have been made available for use in Topobase Web.

Using Workflow Explorer

Your administrator can enable workflows for use in Topobase Web.

To use workflows

- 1 In the Topobase Task Pane, click  Workflow Explorer.



The Workflow Explorer lists the available acquisition, analysis, and report workflows.

- 2 Select a workflow and click Execute.
- 3 Follow the prompts to complete the workflow.

For more information about workflows, see the “Water,” “Wastewater,” “Gas,” and “Electric” User Guides.

Using Electric Explorer

Use Electric Explorer to view, build, and maintain electric networks. The Electric Explorer displays segments, ducts, conductors, devices, and other electric elements and provides functions and workflows to manage network

features. Each class of features is displayed in a separate container so you can select multiple features and edit them at once.

To select a value from a list

In the data grid, when you select a value from a list that contains a large number of entries, you can use a look up tool to quickly find the desired item.

- 1 Click the input field.
- 2 Enter the complete value or some characters.

NOTE Press the Down arrow to select a value from the list without entering a search character.

- 3 Press Enter or click the check mark next to the input field to start searching.

The background color of the input field indicates how many entries were found.

- **White**— No search has occurred. Click the green icon next to the input field to search for the value.
- **Green**— One match found. Press Enter to select the item. To redisplay the list, press the Down arrow on the keyboard.
- **Orange**— Zero or multiple matches found. Use the left and right arrow keys to display them. Press Home to go to the first item, and End key to go to the end of the list. To select a value, click it. To cancel a selection, press Esc.

Using Specialized Modules

Using Topobase Wastewater

Use Autodesk Topobase Wastewater to document, maintain, and present wastewater networks and infrastructure.

Use classification workflows to determine the quality of sections and manholes based on inspection data. Damaged features are coded and quantified based on a chosen wastewater standard.

NOTE Before you can use classification workflows, you must import inspection data using Topobase Client.

To classify imported information



- 1 On the Topobase Task Pane, click Workflow Explorer.
- 2 Expand the Classification workflow and right-click Classify Import. Click Execute.
- 3 In the Workflows group, select the import file to classify and click OK. The classification results are shown in the feature explorer.

You can also classify specific features, inspections or observations (or perform manual classification) using function forms.

To classify using function forms



- 1 On the Topobase Task Pane, click Document Explorer.
- 2 Open a feature class form, for example, Manhole or Section.
- 3 Select one or more features.
- 4 Click Classification ► Classify.

For detailed information see the “Topobase Wastewater User Guide.”

Using Inspection Editor

Use the Inspection Editor to review imported information for a section of the wastewater network.

To use the Inspection Editor

- 1 Select a section and open its form.
- 2 In the Section form, click the Inspection Editor tab.

For detailed information see the “Topobase Wastewater User Guide”.

See also:





- [Setting Wastewater Document Options](#) (page 47)
- [Using Workflow Explorer](#) (page 14)

Using Topobase Electric

Use Autodesk Topobase Electric to manage and analyze electric distribution and transmission networks. You can manage both underground and overhead electric infrastructure.

There are two versions of Topobase Electric: North America (NA) and Central Europe (CE). For detailed information see the “Topobase Electric User Guide.”





To work with Topobase Electric, use the following explorers on the Topobase Task Pane.

- Click  Document Explorer to create new electric features. See [Using Document Explorer](#) (page 12).
- Click  Workflow Explorer to run analysis or maintenance processes on electric data. See [Using Workflow Explorer](#) (page 14)
- Click  Electric Explorer to view, create, and edit electric network features, manage the circuit and phase, and view connected features. See [Using Electric Explorer](#) (page 15).
- Click  Manage Connections to manage logical topologies. See [Managing Logical Connections](#) (page 70).

Using Topobase Gas

Use Autodesk Topobase Gas to document, maintain, and present gas networks and infrastructure.




To work with Topobase Gas, use the following explorers on the Topobase Task Pane.


- Click  Document Explorer to explore gas features. See [Using Document Explorer](#) (page 12).
- Click  Workflow Explorer to run acquisition or analysis processes on gas data. See [Using Workflow Explorer](#) (page 14).
- Click  Manage Connections to manage logical topologies. See [Managing Logical Connections](#) (page 70).
- Click  Topology Checker to validate network topologies. See [Checking Logical Topologies](#) (page 66).

Using Topobase Water

Use Autodesk Topobase Water to document, maintain, and present water networks and infrastructure.

To work with Topobase Water, use the following explorers on the Topobase Task Pane.

- Click  Document Explorer to explore water features. See [Using Document Explorer](#) (page 12).
- Click  Workflow Explorer to run acquisition or analysis processes on water data. See [Using Workflow Explorer](#) (page 14)
- Click  Manage Connections to manage logical topologies. See [Managing Logical Connections](#) (page 70).

-  Click **Topology Checker** to validate network topologies. See [Checking Logical Topologies](#) (page 66).

Tracing a water network

The steps below can be reproduced using the water demo data set, and the Fusion layout.

- 1 Open the workspace.
- 2 On Topobase Explorer, click Position Finder.
- 3 Under Query, select Feature.
- 4 Under Feature Class, select Line.
- 5 Under Feature, select an FID, such as 52420.
- 6 Click Find.
- 7 On Topology Explorer, click Workflow Explorer.
- 8 Under Analysis, select Find Connected. Right-click, and click Execute.
- 9 On the Workflow pane, under Start/Stop Features, click Select Start Feature.
- 10 In the map, select a pipe.
- 11 Click Select Stop Feature.
- 12 In the map, select the pipe.
- 13 Click OK to start the tracing.

See also [Analyzing Network Topologies](#) (page 67).

For more information see the “Topobase Water User Guide.”

Finding Features in Your Map

There are three ways to find data in Topobase Web:

- [Select features in the map manually.](#) (page 41)
- [Use Position Finder.](#) (page 21)

- [Use a feature form to filter and highlight data in the map.](#) (page 38)

Using Position Finder

Use Position Finder to locate a specific feature in the map. Locate any feature that has geometry, for example, a building or a parcel.

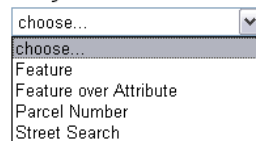
For information about configuring Position Finder for Topobase Web, see the “Topobase Administrator Guide.”

To use Position Finder

- 1 On the Task Pane, click Position Finder.
- 2 On the resulting page, specify the parameters for the search.

Document: TB2010_LM_JOB_102 ▼

Query:



- If the workspace contains multiple documents, under Document, select the document containing the feature to locate.
- Under Query, select the search to use.
For example, locate a feature by Feature Class and Feature ID, or by Attribute. The available query options depend on how your administrator configured Position Finder.
Each search has its own options. Use the options to narrow the search.
- Click Find to locate the feature.

Using Markup Functions

Redlining

Use the Redlining tool to add temporary markup to a map. When you print, redlines are printed. However, you cannot save redlines, and redline geometry is not stored in the database.

To add redline geometry

- 1 On the Task Pane, click Redlining.
- 2 On the resulting page, specify the parameters for the redline.

Geometry Type:

Line Properties:
Thickness: Units:

Pattern:

Color:

Specify the parameters for your redline.

- For Geometry Type, select the type of geometry to create.
 - For Geometry Property, specify the properties for the geometry type you selected.
For text and symbol geometry, set the Size Context to either Device Space or Map Space. Select Device Space to specify text symbol widths and heights in screen units. Select Map Space to specify text and symbol widths and heights in Mapping Coordinate System (MCS) units.
 - Click Digitize
- 3 Create the redline element in the map.

To remove redline geometry

- To remove a single redline element, click the element to remove. Click Clear Selection.
- To remove all redline elements in the map, click Clear All.

Dimensioning

You can add temporary dimension lines or orthogonal markings to features. You cannot save these markings.

To add dimensions

- 1 [Locate](#) (page 21) and zoom to the features of interest.
- 2 On the Task Pane, click Dimensioning.
- 3 On the resulting page, specify the parameters for the dimension markings.

Dimension line Marking

Drawing Layer:

Layer Properties:

Snap: Snap ratio:

Line pattern: ▼

Line color: ▼

Text color: ▼

Text size:

- Click Dimension Line or Marking.
- Under Drawing Layer, select the layer for the dimension elements. To create a new layer for dimension elements, click New and specify a layer name. To delete a layer, select the layer and click Delete.

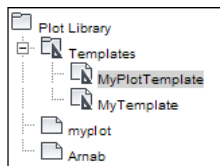
- Under Layer Properties, specify options for the placement and appearance of the dimension elements.
 - Click Save to make your settings the default for future dimension elements.
 - Click Digitize and draw the dimension element in the map.
- 4 To remove dimension elements, click Clear Objects.

Reporting and Sharing

Using the Plot Library

In Topobase Web, you can create plots from an existing template or plot. You cannot create a plot from a blank page, and you cannot create a plot template.


The Plot Library displays the templates and plots that your administrator provided.



Printing Existing Plots

You print an existing plot to refresh the content of the map, showing what is currently stored in the database without changing any plot settings, such as scale, and map insertion point.

To print an existing plot


- 1 On the Task Pane, click Plot Library .
- 2 In the Plot Library, right-click an existing plot and click Preview With PNG.
- 3 In the Preview Plot window, click Plot.
- 4 Specify any printer settings, and send the plot to the printer.

Using Plot Templates


A plot template specifies settings for all the plots that use that template. You can set any unspecified settings in the plot template at plot time. For example, a template specifies the scale, paper size, and layout elements for the plot, but each individual plot can specify the display model to use, the printer to use and the insertion point and rotation for the map placeholder.

Your administrator provides the display models to use.

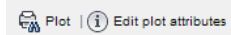
To create a plot using a template

- 1 On the Task Pane, click Plot Library .
- 2 In the Plot Library, right-click a template. Click Create New With Template.
- 3 In the Create New Plot window, enter the parameters for the plot.
 - For Name, specify the name of the plot.
 - For Save In Plot Library Location, specify where, in the Plot Library, the plot will appear.
By default, plots you create from templates are saved in the template folder's parent folder.
 - For Choose Template From Library, specify the plot template to use. The template you right-clicked is selected. To change it, click Browse, select a template from the list, and click Save.
- 4 For Template Maps, specify the map area to display in the placeholder designated by the template.

If a map is not yet captured, under Actions, click Capture Map.

 - In the Capture Map Settings window, to change the area that is plotted, click Draw New and drag a frame around the area to map. The ratio of height and width does not change, and the scale is adjusted.
 - In the Capture Map Settings window, specify the scale for the map.
To choose a scale from a list of predefined scale settings, click . Click a scale setting and click Select.
 - Under Map View, select a display model. Click Generate to refresh the map using the selected display model.
 - Optionally, change the rotation by entering an angle.

- To change the insertion point, click Select and click the insertion point in the map.
The insertion point and the plot scale will determine the area included in the map placeholder.
 - Click Save Capture.
The Create New Plot dialog box now shows the map as Captured. If there are more maps to capture (as defined by this template), repeat the capture process.
- 5 For Preview, specify the preview format.
 - 6 Click Create to create the preview and the plot.
The plot preview is displayed.
 - To send the plot to the printer, click Plot.
 - To see information about this plot or to change the scale, click Edit Plot Attributes.




For more information about plots, see “Topobase Client User Guide.”

Printing Reports

The administrator must define reports and associate them with a form. Then you can generate those reports in Topobase Web.

To print a feature class report

- 1 Open the [feature class form](#) (page 30) and [filter](#) (page 38) for the records to print.
- 2 On the form toolbar, click Print  .
- 3 In the Report dialog box, select the report.
- 4 Specify which records to print.
 - Current Record Only prints only the current record.
 - All Records Of the Selection prints all currently selected records (all filtered records).

You can print any report that has been defined with Topobase Report Designer in the current document.

To print a document report


- 1 In Document Explorer, right-click the document node at the top of the tree. Click Report.
- 2 Select the report to print.
- 3 Click Preview.
- 4 Use your browser's print command to print the report.

Creating Polygon/Line Definition Reports

Use Polygon/Line Definition to create detailed polygon or line definition reports. For example, you can generate a parcel report that lists areas, distances between the parcel border points, parcel borders, points, and parcel numbers.

Before you can use these reports, an administrator must use the Report Designer to define the feature classes that store the lines and points. This configuration is stored in the TB_SURFACE_* system tables. For more information on these topics, see the "Topobase Administrator Guide."

To create a Polygon/Line Definition report

- 1 Click  Polygon/Line Definition.
- 2 In the Report For Lines/Polygons dialog box, select the features for the report.
- 3 Select the job for the report.
- 4 Select the report to generate.
- 5 Optionally, select the Reverse Direction Of The Points check box.
- 6 Click Calculate/Preview.


Exporting Feature Data

You can export data from feature class forms to various formats.

To export data from feature class forms

- 1 Display the feature class form.
- 2 Filter the data to export.

NOTE Only the filtered records are exported.

- 3 On the form toolbar, click  Tools ► Export. Click the format for the exported data.

Choose a Direct option to export all data as stored in the database (DB data). If you choose Excel (Direct), Excel columns are sorted like the columns in the database.

Choose a Form Data option to export all data. Use this option if you do not want to export the ID of the related feature (stored in the database) but the value shown in the form. If you choose Excel (Form Data), columns are sorted like the columns in the form.

- Excel: You can export all data shown in a form, including values that are only shown by controls, like SQL Label, and values without explicit relation.

CR characters (Ascii 13) are replaced, because Excel only needs LineFeed. This is required for multiline text.

- ASCII File: Exports data to text (*.txt) files.
- XML: Exports to XML files. Point feature coordinates are written as GEOM.X and GEOM.Y columns.
- SQL: Exports to SQL files. You can select:
 - Oracle SQL loader files (with spatial geometry)
 - Oracle SQL files (insert statements without spatial geometry)
 - PostGre SQL files (insert statements with PostGre spatial geometry)

- 4 Check the columns to export.

NOTE Only columns that are visible in the form are exported; group-suspended columns are suppressed.

- Columns: Select or deselect the columns to export. Select Clear All to select or deselect all fields. Change the order using the arrow buttons.

All feature class attributes are listed, with control titles (captions) and field names in parentheses

- **Control Titles:** Select this option to include the control title in the export. This is the caption, and not the name of the column in the database. Column names are always exported by default. By default, this setting is not selected for direct export, but it is selected for form export.

Creating and Editing

Creating Features

Use the feature classes in Document Explorer to create new features with or without displaying the associated form. The form allows you to add attribute data.

To create a new feature without attribute data

- 1 In Document Explorer, right-click the feature class.
- 2 Click Digitize.
- 3 Draw the new feature.
- 4 To finish digitizing, hold down the Ctrl key and click.
You can add attribute data later using [feature class forms](#) (page 35).

To create a new feature with attribute data


- 1 In Document Explorer, right-click the feature class.
- 2 Click Digitize With Form.
- 3 Draw the new feature.
When finish creating the geometry, the feature class form is displayed so you can add attribute data.

For more information about creating features, see the “Topobase Client User Guide”.


Editing Feature Information

Use feature class forms to display and edit feature data.

Right-click any tab in the feature class form to use shortcut menus. Input fields have their own shortcut menus.

TIP You can also display the shortcut menus by clicking  Tools in the form toolbar.

To edit attribute data

- 1 In Document Explorer, right-click the feature class to edit.
- 2 Click Show Form.
- 3 On the form toolbar, click Edit Record. 
- 4 Enter the attribute values. Click Update.

For more information about using feature class forms, see the “Topobase Client User's Guide.”

For more information about customizing forms, see the “Topobase Administrator's Guide.”

Using Templates

A template is a set of features you can reuse. A template contains geometry, attributes, labels and internal connectivity. Use templates to create groups of features to reuse. For example, create a template for a transformer bank, compatible unit, substation, or cross section.

To define a template, select an existing feature in a map and convert it into a template. After you create the template, you can delete the original feature. Templates are defined in a local coordinate system. When you instantiate a template in the map, you digitize the origin and specify an orientation.

To create a template

- 1 If necessary, create the features to group as template.
- 2 Select the features to group as template.
Shift-click to select multiple features. Press Enter to complete the selection.

- 3 In Document Explorer, right-click the feature class for the template. Click Create Template From Selection.
- 4 Select the origin and specify the orientation.

The origin defines the insertion point at feature creation time. The orientation specifies the basic orientation (null orientation) of the feature set. When you use the template, you are prompted for an insertion point and an orientation.
- 5 In the window that displays, do the following:
 - Enter a template name.
 - Use the tabs to specify more properties.
 - General tab— Specify whether to group features when moving, rotating, or deleting them. Specify any [reference records](#) (page 37) for specific features.
 - Access tab— Assign the template to another appropriate feature class.
 - Connectivity and Relations tabs— View connections and relations of the template features.

For more information on these tabs, see the “Topobase Client User Guide.”


 - Click Save.

To digitize features using a template

- 1 In Document Explorer, right-click the feature class to which the template was assigned. Click Digitize From Template.
- 2 In the template list, select the template to use for creating the new feature.
- 3 Click OK.
- 4 In the map, select the origin point. Then select a second point that indicates the orientation.

To view a template definition

- 1 In Document Explorer, right-click the feature class to which the template was assigned. Click Manage Templates.
- 2 Do any of the following in the Manage Templates dialog box:

Delete— Select the template and click . If you delete a non-grouped template, you must confirm the deletion. The features that were created using the template are not deleted. If you delete a grouped template, the features that were created using the template are ungrouped, but not deleted.

Connectivity and Relations tabs— View connections and relations of the template features.

Access tab— Assign the template to another appropriate feature class.

For more information about using and managing templates, see the “Topobase Client User Guide.”

Construction and Calculation

Use the Construction toolbar to start the construction functions.



The construction tools appear on the Topobase Explorer pane.


You can calculate point and line features and store them into the database.

For more information, see [Construction and Calculation](#) (page 73).

Deleting Features

You can delete features from the database. When you work with Topobase jobs you can delete features that have been processed within a job.

To delete a feature

- 1 Click the feature.
- 2 Click Delete Feature .

See also:

- Deleting Job Modifications

Splitting Lines

For the utility modules, such as Wastewater, Water, or Gas, use the Soft Split or Hard Split commands to digitize a point and split a network line.

When you use Soft Split to divide a line into two, each resulting feature has its own geometry, but they both use the same attribute data.

When you use Hard Split, the resulting features have their own geometry and their own attribute data. Use Hard Split for point features of major importance, such as a pump or a valve. Use Hard Split if the attributes of the pipe (for example, diameter, material, or model) change after the split.

To digitize a point and split a line


- 1 In Document Explorer, right-click a feature class (for example, Pipe or Section).
- 2 Click one of the following.
 - Soft Split (Only Geometry)
 - Hard Split (Also Attributes)
- 3 In the map, select the line.
- 4 In the Select dialog box, select the point feature class to digitize. Digitize the point.

For more information, see the Topobase “Wastewater,” “Water,” or “Gas” User Guide.

Adding Labels

You can create label text for any feature in the drawing that has an active and valid label definition.

To add a label

- 1 Click  Create Label.
- 2 In the map, click a feature to label.
 - Click a feature whose feature class has an associated label feature class.
- 3 If prompted, select a label definition.
- 4 If prompted, specify a position.

The label is created according to its definition.

NOTE Auto labels are created instantly without any user action.

For more information about defining and using labels, see the “Topobase Administrator Guide.”

Performing Intersections

Use the Topobase intersection routines to calculate intersections between two feature classes. Intersections can be defined in the Topobase data model administrator.

Intersections are also called overlays. For example, to determine which border points lie within which parcels you would see where those feature classes intersect. In that example, you would examine the intersection between a polygon feature class and a point feature class.

To start an intersection

- 1 In Document Explorer, expand the Intersections node.
- 2 Right-click the intersection and click Intersect.
- 3 In the Select The Perimeter For The Intersection dialog box, select one of the following:
 - Intersect Over Area. Select features and click Select.
 - Intersect Over All. All features are selected. Click OK.

For more information about defining intersections, see the “Topobase Administrator Guide.”

Using Data Checker

Use the Topobase Data Checker to validate the quality of your data. Your administrator must define the checks.

The result of the checks, for example features with wrong or inconsistent data, is displayed in the Feature Explorer.

To start Data Checker

- 1 In Document Explorer, right-click the document node at the top of the tree. Click Data Checker.
- 2 In the Data Checker window, select the checks to run.
- 3 Click Execute.

For more information about configuring data checks, see the “Topobase Administrator Guide.”






Using Feature Class Forms





Using the Feature Class Form Toolbar

The feature class form toolbar is at the bottom of the form.



Some tools are visible only under certain conditions. For example, Create Label is available only for features of classes with label definitions.

Tool	Description
	Click First, Previous, Next, and Last to change the currently displayed record.
	Click Filter to define a filter that displays only the data of interest. Click Remove Filter to clear the filter and display all records in the feature class. For more information, see Filtering Data in Feature Class Forms (page 38).
	Click Edit Record to modify the attributes of the current feature.
	Click Delete Record to delete an individual record.
	Click Refresh to read the records from the database and redisplay the current records using the same



Tool	Description
	filter. Use this function in applications that use triggers in fields.
	<p>Click New Record to create a new record without geometry. To digitize geometry at any time click Digitize New Geometry For Selected Feature. To create a completely new feature and add attribute data at the same time, click Digitize New Feature. After you create the geometry, a new blank record is displayed so you can add attribute data. Click Digitize Inner Ring to create polygon features with a hole, for example, an island in a body of water or the footprint of a building with a courtyard. The inner and outer ring are parts of a single feature. Based on the outer ring you can either digitize the inner ring or select an existing polygon or feature to be inserted. Only polygon feature classes have a tool for creating inner rings.</p>
	<p>Click Global Update to modify all records in the current filter using the same values. For more information, see Updating Records Globally.</p>
	<p>Click the Highlight icons to highlight the geometry for a selected record or for a set of records. You can also highlight the geometry of features related to a record or set of records. Use Unhighlight to clear the highlighting.</p>
	<p>Click Print to generate standard reports or user-defined reports for each form. For more information, see Printing Reports (page 26).</p>

Updating Records Globally

You can modify all records in the current filter using the same values.

To globally update records

- 1 In the feature class form, select all records to change.

- 2 On the form toolbar, click  Global Update.
- 3 Enter your changes.
- 4 Click  Global Update again to save your changes to the database for the selected records.


Adding Data Using Reference Records

A reference record is a template for new records.

Reference records consist of a set of defined attributes and their values (reference attributes). When you insert a new record using a reference record, the reference attributes are entered for that record. Use reference records to improve performance and accuracy when you enter attributes repeatedly. You can save and manage several reference records.

You can use reference records in a feature class form in Edit mode. You can also use reference records when you digitize features or create features using workflows.



To define reference records

- 1 Display the feature class form.
- 2 On the form toolbar, click  Tools ► Reference Records ► Add.
- 3 In the New Reference Record dialog box, enter a name for the reference record.
- 4 Select Public if the reference record is available to all users.
Public reference records are available to all users who are logged in.
Non-public reference records are only available to the current user.
- 5 Select Use Last Value As Reference to use previous values.
If you select Use Last Value As Reference, reference data is dynamic and will be set to the values the user entered before in the reference attributes. When you create a new record, the values are shown in the input fields. If necessary you can change the values before update.
If you do not select Use Last Value As Reference, the next new record will have the defined reference values.
- 6 Click OK.

The input fields are highlighted, so you can define the attributes of the reference record.

- 7 Enter the reference values.
- 8 Click Save to activate and save the reference record.

To use a reference record


- 1 Display the form for a feature.
- 2 Click  Edit Record.
The reference record appears in the status bar on the right. *No Reference indicates that no reference record will be applied.
- 3 Click  to select a predefined reference record.

Filtering Data in Feature Class Forms

Filtering Techniques


You can filter features from within feature class forms or from the map.

In feature class forms, use these techniques to filter data:

- Use the filter commands on the input field shortcut menus.
- In Edit mode, use  on the toolbar to define or remove a filter.
- In Filter mode, enter the values to filter in the input fields.
Select any of the following options from the list box at the right bottom status bar of the form.
 - Simple Filter: The default.
 - Additive Filter: Connects the previous and the new filter with an SQL AND condition.
 - Or Filter: Connects the previous and the new filter with an SQL OR condition.

- Define a SQL statement to select the records.


To filter with SQL statements

- 1 In the feature class form, in Edit mode, click  ► Filter ► SQL Filter.
- 2 In the SQL Filter dialog box define the SQL filter statement.
The SQL Filter dialog box shows the select statement that was used for the active filter, such as “rownum<101” for a start filter or “(AREA > 300) AND (ID_QUALITY = 2)”.

NOTE OrderBy clauses that were defined in the form designer options are displayed and can be set. You must separate the Order and the By expression by exactly one blank space.

- 3 Click OK to execute the filter.

NOTE The filter is not saved. To save and reuse filter definitions, see the [Saving and Reusing Filters](#) (page 40) topic.

- Use  (Feature Information) in the feature class form to select the features in the drawing of that feature class. Selected features that are not in the feature class are ignored.
- Use Excel to filter data.
See Excel Export.
- Use database projections. See [Filtering Related Records](#) (page 42).

You can also select elements in the drawing manually. See [Spatial Selection](#) (page 41).

Filter Expressions

Expression	Description
	NOTE Oracle is case sensitive when searching text.
<, <=	Less than or equal to

Expression	Description
> ; >=	Greater than or equal to
<>	Unequal
*	A wildcard character. In Oracle, use the wildcard character % in tables.
IS NULL	For blank field searching - database NULL
IS NOT NULL	For non-blank field searching
>17.3.99 <19.3.99	Searches by Date. All data created between 17.03. and 19.03 is found.
	Filtering by multiple values (numeric fields only)
Examples	Available operators for linking: AND, OR; unspecified = AND ; = OR = = OR & = && = AND
>50 <20	Single range specification
>5 AND <10	Greater than 5 and less than 10
5;10;15	5 or 10 or 15
5 OR 10 OR 15	
<5 OR 15	Less than 5 or 15
NOTE You can also filter columns of the type Date by typing only the number indicating the year.	

Saving and Reusing Filters

You can save and reuse filter definitions.


To re-use filter conditions, execute any filter, then start the Filter Manager and add a filter. The previously executed filter (SQL statement) appears as the default. You can add or modify it.

You can use input parameters in SQL filter select statements. For example, the filter can prompt the user to enter a length. If the parameter is a numeric value, use the # character. If it is a text value, use the \$ character.

Example: {#length} {\$Name}

```
select * from WW_SECTION where  
pipe_length > {#Length}
```


To start the Filter Manager

- 1 Show the feature class form.
- 2 On the form toolbar, click  ► Filter ► Filter Manager.
- 3 Do any of the following:
 - To add a filter definition, click Add. The most recently used filter expression appears as the default.
 - To modify a filter definition, click Modify and make your changes.
 - To remove a filter definition, click Remove.
 - To execute a stored filter, right-click and click Filter ► Execute.

Spatial Selection

You can select features manually, and then view the results of your selection in the feature class form.

To perform a spatial selection


- 1 In the Document Explorer, right-click a feature class and click Spatial Selection.
- 2 Under Selection Type, select a rectangle, polygon, or point and click the dynamic prompt in the dialog box.
- 3 Click  (Feature Information) on the toolbar to view the results of your selection in the feature class form.

Filtering Related Records

Use projections to show related records.

For example, you can select all the labels that belong to the features you selected. The Reference button displays only the labels of the current feature. Projection displays all labels of all features you filtered.

To filter data with projections

- 1 In the feature class form, click  ► Projection.
- 2 Click the All Projections tab to see a list of all existing feature class relations.
- 3 Select a relation and click OK.

To add a named projection

You use Topobase Client to add named projections.

Setting Topobase Web Options

Setting Application Options

You can specify job, map, COGO, and plug-in options.

To set application options

- 1 Click Setup ► Options.
- 2 Do any of the following:
 - Click Job to specify job lease duration and regenerate options. See [Setting Job Options](#) (page 43).
 - Click Map Options to specify feature zoom options for highlighting. See [Setting Map Options](#) (page 43).
 - Click COGO to set options for the construction and calculation functions. See [Setting COGO Options](#) (page 44).
 - Click Plug-Ins to view loaded plug-in applications.

Setting Job Options

Job Options specify the behavior of Topobase Web when you select a job to work with.

To set Job options

- 1 In Document Explorer, right-click the document node at the top of the tree. Click Document Options.
- 2 In the tree view, click Jobs With Topologies.
- 3 Set the following options:
 - Duration Of Job Leasing: Specifies the period for automatic job leasing. The leasing period starts as soon as the job is selected.
 - Automatically Lease The Selected Job: Leases a job automatically. If you select this option, you can enter a leasing period.

NOTE You can lease jobs manually using the Job Manager.

See also:

- Working with Jobs

Setting Map Options

Map Options specify settings for digitizing and for highlighting.

To set Map options

- 1 In Document Explorer, right-click the document node at the top of the tree. Click Document Options.
- 2 In the tree view, click Jobs With Topologies.
- 3 Set the following options:
 - Snap Radius For Digitizing In TB Web: Enables and specifies the snap radius. When you digitize points, existing points within the snap radius are found. For example, this setting is used when you digitize a point to close a polygon.
 - Vicinity For Digitizing Points: Searches for points that already exist in the database when creating a new point feature. This option finds

points that are in the vicinity of the new point and that have defined values for "Z (height)" and "QUALITY". See the "Topobase Administrator Guide" for more information.

- Zoom For Feature Highlight/Zoom GoTo: Specifies the zoom factor for highlighting the current feature of a feature class form or in Document Explorer using the highlight button.
- Configuration For Point Feature Classes: Specifies the map view. Enter values.
- Configuration For Other Feature Class Types: Specifies the map view. Enter a magnification factor. The view size is calculated based on the extents of the selected features.

Setting COGO Options

COGO options define settings for Topobase construction functions.

To set COGO options

- 1 In Document Explorer, right-click the document node at the top of the tree. Click Document Options.
- 2 In the tree view, click Jobs With Topologies.
- 3 Set the following options:
 - Right Angle Course: Specifies the mode for right angle course calculation. Select either of the following:
 - Point Mode—The right angle course is defined by an arbitrary sequence of known points and measured sections.
 - Base Line Mode—The right angle course is defined by two existing points that specify the base line section followed by measured sections.
 - Precision: Specifies calculation precision. The default is 0.001.
 - Split Tolerance: Specifies whether a line can be considered straight after inserting or extracting a point. This value specifies the maximum distance of a point from the line, which must be greater than the spatial tolerance.

- **Split Line After Inserting Point:** Splits the line after you use the Insert Point command.
- **Point Insertion Settings:** Specifies how the Precision and Reliability attributes are set by the Survey application when you use the Insert Point command to insert a point into a line. When an existing point is projected onto a line, its reliability is improved and its coordinates are changed.
- **Precision:** Defines the feature attribute where the precision of an inserted point is saved.
- **Reliability:** Defines the feature attribute where the reliability of the inserted point is saved.
This attribute usually refers to a domain *_TBD. You can specify the value (*_TBD.ID) for the two states: Reliable and Not Reliable.
For example, reliability values could be stored in the domain table RELIABILITY_TBD where
ID = 1 is not reliable
ID = 2 is reliable
- **Reliable:** Specifies the reliable value ID. For example 2.
- **Is Not Reliable:** Specifies the not reliable value ID. For example 1.

Setting Document Options

Document options apply to the currently selected document in Document Explorer.

To set document options

- 1 In Document Explorer, right-click the document node at the top of the tree. Click Document Options.
- 2 Do any of the following:
 - Click Common to view general document information, such as the name of the database schema.
 - Click COGO And Dimensioning to set COGO document options. See [Setting COGO and Dimensioning Document Options](#) (page 46)

- If you use the [Wastewater](#) (page 47) or [Electric](#) (page 47) versions of Topobase, you can set document options related to those versions.

Setting COGO and Dimensioning Document Options

COGO And Dimensioning document options control construction issues that are specific to only one document.

See also Construction and Dimensioning.

To set COGO and Dimensioning options

- 1 In Document Explorer, right-click the document node at the top of the tree. Click Document Options.
- 2 In the tree view, click Jobs With Topologies.
- 3 Set the following options.
 - **Delete Construction Features From The Document:** Deletes the temporary COGO features to clarify the construction workflow. Normally these are deleted as soon as Topobase COGO is finished.
 - **Dimension Feature Class For:** Specifies the dimension feature classes to store dimensioning that can optionally be created when you use the COGO commands.
 - **Orthogonal Calculation:** Selects a dimension feature class that stores the orthogonal dimensioning.
 - **Arc Intersection:** Selects a dimension feature class that stores the arc dimensioning.
 - **Dimensioning:** Settings for dimensioning.
 - **Constant Offset For Aligned Dimensioning:** Specifies an offset value for aligned dimensioning.

NOTE Set general COGO options using [COGO application options](#) (page 44). Click Setup ► Options.

Setting Wastewater Document Options

Wastewater options are available only in wastewater documents.

To set Wastewater document options

- 1 In Document Explorer, right-click the document node at the top of the tree. Click Document Options.
- 2 In the tree view, click Wastewater.

For more information, see the “Topobase Wastewater User Guide.”

Setting Electric Explorer Document Options

Electric options are only available in electric documents.

To set Electric Explorer document options

- 1 In Document Explorer, right-click the document node at the top of the tree. Click Document Options.
- 2 In the tree view, click Electric Explorer.
- 3 In Electric CE documents, click Electric CE to specify Multi Conductor and Station Internal options.

For more information, see the “Topobase Electric User Guide.”

Using Jobs in Topobase Web

2

Navigating Topobase Jobs

Topobase Web provides the following:

- [Topobase Job Control](#) (page 49) to work with jobs.
- [Topobase Job Explorer](#) (page 50) to process the features that are modified in the selected job.
- [Topobase Job Manager](#) (page 51) to process jobs and job states.

Using the Job Control

The Job Control is visible only if the current document is job-enabled.

Job:  

Use the Job Control to select a job to work with. If no jobs (other than the default Live job) are selectable, you must [create a job](#) (page 53). Use [Job Manager](#) (page 51) to create a job.

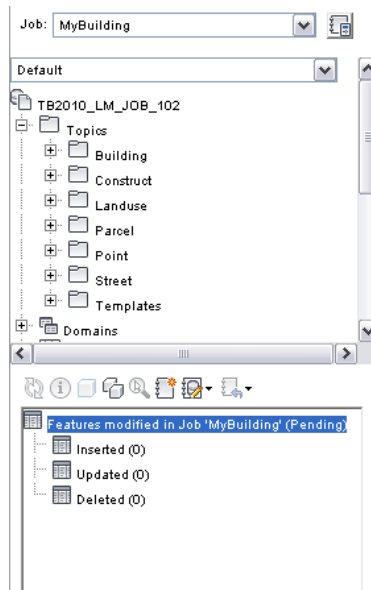
See also:

- [Selecting a Job](#) (page 54)


Using Job Explorer


Use Job Explorer to view and process all modifications for a job. Job Explorer groups features as follows:












- Inserted
- Updated
- Deleted
- Locked Features (features you locked manually to modify in the future, but have not yet selected)



To start Job Explorer

- In Topobase Explorer, select a job and click .

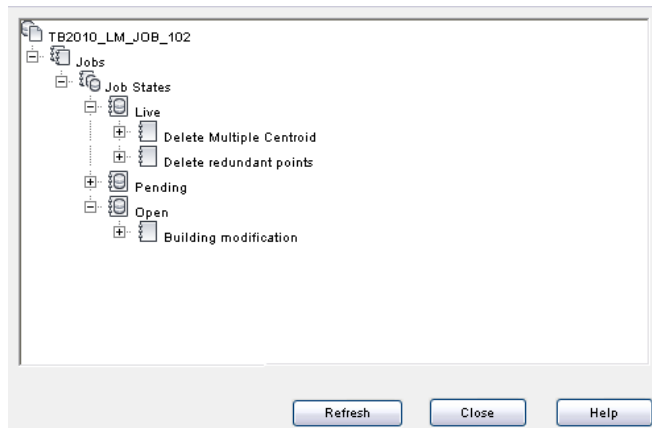
Job Tools	Description
	Redisplays Job Explorer.

	Opens the form for the selected feature.
	Highlights or unhighlights the selected feature in the map.
	Zooms to the selected feature.
	Returns selected features to their original state, undoing any modifications you made.
	Displays the modifications of the selected feature.
	Extracts the selected features, adds them to a new job, and sets them to live (partial posting). Available for pessimistic locking.
	Locks a feature manually. Available for pessimistic locking.
	Unlocks a feature you locked manually.
	Undoes all modifications to the selected job.
	Checks for job conflicts and opens the Job Conflict Explorer. Available for optimistic locking. See also Managing Job Conflicts (page 58).
	Changes the job state. See Changing the Job State (Job Transition) (page 57).

Using Job Manager

Job Manager shows the jobs for the current document, grouped in chronological order or by job state.

Right-click job items to see their available operations.



To start Job Manager

- In Topobase Explorer, click  Job Manager.
The Job Manager icon is next to the Job drop-down list.

Understanding the Job Workflow

Your Topobase Administrator must provide you with a job-enabled document and job templates. For more information, see the “Topobase Administrator Guide.”


To work with jobs in Topobase Web, follow these basic steps:

- Do one of the following:
 - If the job you want is already available, [select a job](#). (page 54)
 - If the job you want does not exist, [create the job](#) (page 53) and [specify the job perimeter](#). (page 53)
- Make your modifications. If needed, [undo some or all modifications for a job](#) (page 56)
- [Change the job state to Pending](#). (page 57)
- [Validate and approve the modifications](#). (page 58)
- [Change the job state to Live](#). (page 57)

Creating a Job

Use Job Manager to create a job.

To create a job

- 1 In Topobase Explorer, click  to start Job Manager.
- 2 Right-click Jobs and click Create Job.
- 3 In the Create Job dialog box, select a job template and specify the properties for the job.
- 4 Click OK.
- 5 When prompted to select the job perimeter, click Yes if you work with perimeters.
You can skip this step now and create job perimeters later.
- 6 In Job Manager, expand Jobs ► Job States ► Open.
The new job is listed.
- 7 Expand the new job to see which topics and feature classes it contains.


See also:

- [Using Job Manager](#) (page 51)
- [Defining the Job Perimeter](#) (page 53)

Defining the Job Perimeter

As soon as you create a job, you are prompted to define its perimeter. If you don't define the job perimeter at that point, you can define it later.

To define a job perimeter after the job is created

- 1 In Topobase Explorer, click  to start Job Manager.
- 2 In Job Manager, expand Jobs ► Job States ► Open.
- 3 Right-click the job and click Select Perimeter.

- 4 In the Select Perimeter dialog box, select existing polygons or digitize a new perimeter. You can highlight the selected perimeter.
 - **Create Perimeter From Topology:** Click Select to select the polygons to work with, for example, parcels to modify in the current job. You can select polygons that are disjointed. The system builds the job perimeter from all selected polygons.
If the job contains any topologies, the list box displays the topology polygon feature class (*_TSUR).
If there are no topology feature classes in the job, the list box is empty. You can digitize the job perimeter.
 - **Create Perimeter From Polygon:** Select a polygon feature class from the list and digitize the perimeter. The list box shows all polygon feature classes that are specified as perimeter and are job-enabled.

The job perimeter you selected or digitized is stored in its respective perimeter feature class. If perimeters intersect, a warning is displayed. Perimeter intersections are allowed. Possible conflicts will be detected by the Topbase Job Conflict Manager.

See also:

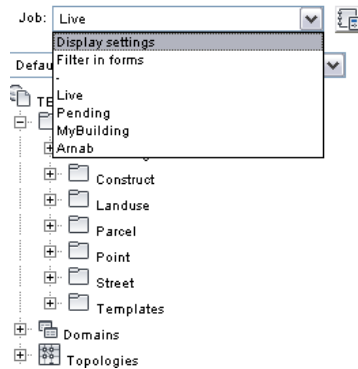
- [Creating a Job](#) (page 53)
- [Managing Job Conflicts](#) (page 58)

Selecting a Job

In the Job Control , select a job from the list of all available jobs. You can use a filter to reduce the number of jobs that are displayed in the list.

To filter the jobs by job state

- 1 From the Job Control, select Display Settings.



Display and filter settings are on the Job Control.

- 2 In the Display Settings window, select the types of jobs to list. For example, select Open to see all open jobs.

To select a jobs using a filter

- 1 From the Job Control, select Filter In Forms.
- 2 In the TB_JOB feature class form, use the filter tools to search for the job. See [Filtering Data in Feature Class Forms](#) (page 38).
- 3 Click Select Job to select the job.
- 4 Close the form.

NOTE In a job enabled document, if you select the Live job you cannot modify any features.

You can now work with all topics and feature classes that are part of the selected job. If you have finished, you can change the job state, as for example to pending or you can delete your modifications.

See also:



- [Using the Job Control](#) (page 49)
- Deleting Job Modifications
- [Changing the Job State \(Job Transition\)](#) (page 57)

Undoing Modifications in Jobs



Once you select a job, you can make modifications to features as you normally do. You can undo some or all of your modifications.

You can undo some or all modifications you made in a job, as long as the job state is “open.”


To undo all modifications to a job

- 1 In Topobase Explorer, click  to display Job Explorer.
- 2 Click  Undo All Modifications In This Job.

To undo modifications to selected features

- 1 Select the features whose modifications you want to reverse.
- 2 In Topobase Explorer, click  to display Job Explorer.
- 3 Click  Undo Modifications Of Selected Features.

To undo some modifications

- 1 In Topobase Explorer, click  to start Job Manager.
- 2 In Job Manager, expand Jobs ► Job States ► Open.
- 3 Right-click the job and click Delete Some Modifications.

The Delete Modifications dialog box displays all modifications down to the feature level. They are grouped by event, for example, “inserted,” and by topics. Use the toolbar to process the features. For example, select an item and highlight it in the map. Then delete it.

See also:

- [Using Job Manager](#) (page 51)

Changing the Job State (Job Transition)


You can change the job state at the job level or at the job topic level (within a job, you can change the state topic-wise).

Changing the job state may require a password. Check with your Topobase administrator if you need a password.

If you change the job state for concurrent jobs, the system checks whether a single feature was modified or deleted in different jobs. It tells you how to continue in case of conflicts.

NOTE You can define intersections that are calculated when the job state changes.

To change the job state in Job Manager

- 1 In Topobase Explorer, click  to start Job Manager.
- 2 In Job Manager, expand Jobs ► Job States.
- 3 Right-click the job (or job topic) and click Change State or Change State Per Topic.
- 4 In the window that displays, choose a new state for the job or job topic. The current state of the job determines which new state you can choose.

Current Job State	Possible Job States
Open	Pending
Pending	Open or Live
Live	None

See also:

- [Managing Job Conflicts](#) (page 58)

Managing Job Conflicts

If you work with several jobs, you can cause conflicts. For example, if you modify a feature in one job, and then modify it differently in another job, the modifications may conflict.

You can lock features to avoid conflicts. Topobase supports two types of feature locking: pessimistic feature locking, and optimistic feature locking. For more information, see the “Topobase Administrator Guide.”




Pessimistic Feature Locking

With pessimistic feature locking, you cannot modify a feature in Job A if the feature is being used in Job B. To resolve the conflict, perform a partial posting in Job B. The feature then becomes available in Job A.

When you modify a feature in a job, the feature will be locked automatically. To prevent job conflicts in advance, you can lock a feature manually, before they are modified. This ensures that no other job will use the features.

You cannot unlock a feature that is being modified in another job. A feature that is locked by a job will be unlocked, either when you undo the modification or when you set the job to live.

To lock and unlock features

- 1 In Topobase Explorer, select a job and click .
- 2 Expand the Locked Features node.
- 3 Select a feature class.
- 4 Click  Lock Features.
- 5 Select the features in the map.
Features that are modified in the job are locked automatically.
- 6 To unlock the features, click  Unlock Features.

The selected features are added to the Locked Features item, where only manually locked features are listed. Automatically locked features are listed under the Inserted, Updated, and Deleted nodes.


Optimistic Feature Locking

With optimistic feature locking, job conflicts can be detected only when you change the job state of all jobs.



- Before you change the job state, you can check the job manually for conflicts.
- When you change the job state, the system automatically checks whether the job contains features that have also been modified in other jobs.

To manually check for job conflicts, use Job Manager or Job Explorer. Job conflicts are detected only if a concurrent job has a different job state. For example, no conflicts are detected as long as the jobs are open.

To use Job Manager to manually check for job conflicts

- 1 In Topobase Explorer, click  to start Job Manager.
- 2 In Job Manager, expand Jobs ► Job States.
- 3 Right-click the open job and click Check Job Conflict.
- 4 Select the job state for the check and click OK.

To use Job Explorer to manually check for job conflicts

- 1 In Topobase Explorer, select a job and click .
- 2 Select the features to check.
- 3 Click  Check For Job Conflicts.
- 4 Select the job state for the check and click OK
The Job Conflict Explorer displays any conflicts that are detected. Each conflict is shown in a separate tab.
- 5 Expand the items in the Job Conflict Explorer. Do any of the following:
 - To cancel a modification, select the feature and click Delete Modification.
 - To see all features of the current job, expand the MyJob node
 - To see all jobs that are affected by the feature conflict, expand the <other jobs> node.

For example, if you modify a feature in one job and then delete that feature in another job, you cannot set them both to pending: a conflict will result. Use Delete Modification to undo one of your changes and eliminate the conflict.

To use automatic job conflict validation

If you modify a feature in more than one job, the Concurrent Job dialog box is displayed as soon as you change the job state of the first job.

- Click Yes to change the job state.
- To change the second job state, resolve the conflict in the dialog box that displays.


See also:

- [Using Job Manager](#) (page 51)
- [Using Job Explorer](#) (page 50)

Creating a Historical Job View

You can show data as it was at a certain date, for example a year ago.

To create a historical job view

- 1 In Topobase Explorer, click  to start Job Manager.
- 2 In Job Manager, expand Jobs ► Job States.
- 3 Right-click any job and click Historical View.

Leasing a Job

By default, data in a job is accessible only until that job is set to the Live state. You can make job data available, for example, to SQL Plus, using job leasing.

To make job data available to other applications before it is Live

- 1 In Topobase Explorer, click  to start Job Manager.

- 2 In Job Manager, expand Jobs ► Job States.
- 3 Right-click the job and click Lease Job.
- 4 In the Lease Job window, specify the end date of the lease.

See also:

- [Setting Job Options](#) (page 43)

Working with Topologies

3

Area Topologies and Logical Topologies

Topologies model objects and phenomena of the real world. Use area topologies to model land and other flat surfaces. Use logical topology wherever real world objects are connected to each other in networks.

Topobase utility applications, such as Water, Gas, Wastewater, or Electric CE use logical topologies that comply with the Topobase utility model.

Area topologies

Use area topologies to represent parcels in cadastral applications. Parcels are defined by their borders and incorporate data for the entire parcel. The border in this model corresponds to a set of lines; the area corresponds to a polygon. With an area topology, you build areas (polygons) from a set of lines.

NOTE To digitize lines that build a closed polygon, specify a snap radius in the application Map Options. See [Setting Map Options](#) (page 43).

Logical topologies

Use logical topologies to connect features of any feature classes. The features do not have to be spatially connected or have geometry. You can use a logical topology to connect points with points, lines with lines, lines to points, or attribute features with attribute features.

Topobase utility models are based on logical topologies that connect points and lines. For example, a logical topology can represent a wastewater network or electrical transmission lines.


A network topology is a type of logical topology that is based on an arc-node model and uses geometry.

For more information about topologies, see the “Topobase Administrator Guide.”

Checking Area Topologies

You can validate an area topology by checking the data in the topology support tables for topology errors. Topology errors can include polygons crossing themselves or centroids without polygons.

To check an area topology

- 1 In Topobase Explorer, click  Document Explorer.
- 2 In Document Explorer, expand the Topologies item.
- 3 Right-click an area topology and click Topology Checker.
In the resulting window, each topology error type is stored in its own node.
- 4 Expand the nodes and items to see more details.
At the feature level, by default, the FID and name of the feature class is shown. Double-click an item to display the feature information related to the error message.



NOTE You must enable the double-clicking in the application options. See [Setting Application Options](#) (page 42).

The following error types may be displayed:






- Centroid Has No Surface: A centroid feature does not lie within a surface. This may be due to a “Line Not In Closed Loop” error.
- Line Not In Closed Loop: The edges of an area topology have to build a closed polygon. If a line is not part of a valid polygon, it is listed here. This may be due to a “Lines Cross or Touch” error or a “Line Crosses or Touches Self” error.
- Lines Cross Or Touch: An edge crosses or touches another line.
- Line Crosses Or Touches Self: Lines cross or touch each other.
- Centroid Has Null-Geometry: The centroid has no geometry (no coordinates).
- Line Has Null-Geometry: The edge has no geometry (no coordinates).

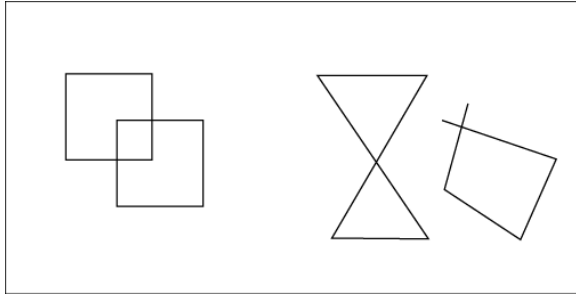
- Surface Has Errors: Invalid polygons are saved in the system table _TSER. The reason for this error can be one of the following:
 - Line Has More Than {0} Vertices: The edge has many vertices.
 - Line Has Duplicated Sections: The edge has a section that has been digitized twice (mostly forth – back – forth).
 - Line Has Adjacent Points: The edge has two or more adjacent points that lie together closer than the tolerance value.
 - Two Or More Rings Touch: An outer and inner ring or two inner rings touch.
 - Coordinates are outside of the spatial extents. : The coordinates are outside of the spatial extents.
 - Surface Has Multiple Centroids: The surface has more than one centroid. Expand the surface items to see the centroids.

5 Do any of the following:

- Select an error and click  .
All features under the selected item are highlighted. To remove the highlighting, click  .



-  Zoom to the highlighted feature in your map. You can also click Zoom On Click to automatically zoom to a feature when you click it.
-  Open the feature class form to see feature information.
-  Delete the selected feature from the database.
-  Create missing centroids for the selected polygon. This tool is not available unless a polygon is missing a centroid.
-  Find intersecting lines that were not detected by the standard topology check. This tool is for rare cases, where intersecting lines do not cause invalid polygons. It can take a long time to execute.




The polygons on the left can be detected only with Find Intersecting Lines. The polygons on the right are detected using the standard topology checker.

- 6 When you are finished repairing topology errors, click  to make sure no errors remain.

Checking Logical Topologies

Use the Network Topology Checker to process logical topologies.

To check a logical topology






- 1 In Topobase Explorer, click  Document Explorer.
- 2 In Document Explorer, expand the Topologies item.
- 3 Right-click a logical topology and click Topology Checker.
In the resulting window, each topology error type is stored in its own node.
- 4 Expand the nodes and items to see more details.
At the feature level, by default, the FID and name of the feature class is shown. Double-click an item to display the feature information related to the error message.

NOTE You must enable the double-clicking in the application options. See [Setting Application Options](#) (page 42).

The following error types may be displayed:

- Feature Has No Connections: The feature is not connected to another feature.
- Edge Without Start Node: Applies to a utility model topology.
- Edge Without End Node: Applies to a utility model topology.
- Node Without Edge: Applies to a utility model topology.
- Edge With More Than One Start Node: Applies to a utility model topology.
- Edge With More Than One End Node: Applies to a utility model topology.

5 Do any of the following:

- Select an error and click  .
All features under the selected item are highlighted. To remove the highlighting, click  .
-  Zoom to the highlighted feature in your map. You can also click Zoom On Click to automatically zoom to a feature when you click it.
-  Open the feature class form to see feature information.
-  Delete the selected feature from the database.

6 When you are finished repairing topology errors, click  to make sure no errors remain.

For more information about network analysis workflows, see the appropriate Utility Application Guide, such as “Topobase Water Application Guide.”

Analyzing Network Topologies


You can analyze a network topology (sometimes called tracing) within predefined workflows or with the Network Tracer.

Use the Stop Condition Editor in the Workflows pane to specify a stop condition. You can use a predefined stop condition, or you can define a new one.

The Topobase administrator defines tracings and tracing conditions. You can see them if you defined a logical (network) topology.

Some data models (for example, in the Gas, Water, Wastewater, and Electric modules) have predefined tracings.

To analyze a network topology

- 1 In Topobase Explorer, click  Document Explorer.
- 2 In Document Explorer, expand the Topologies item.
- 3 Right-click a topology and click Network Tracer.

If your Topobase administrator defined any other tracings, they also appear on this shortcut menu. If a tracing uses a stop condition, when you select it the Stop Condition Editor is displayed. You can often tell which tracings use stop conditions by their names.

NOTE You can also start the Network Tracer from the [Workflow Explorer](#) (page 14) by selecting an Analyze workflow.






- 4 In the Network Tracer dialog box, in the Tracing Template list, select a template.
Tracing templates are predefined tracing models (propagation) that are defined in the data model administrator.
- 5 Follow the on-screen instructions in the Features section.
Workflows vary, depending on the tracing template.

NOTE The administrator defines network tracing templates in the data model administrator.

- 6 If you are tracing an attributive network topology, specify the start and end features in the feature class form.
 - Click Start Features to specify a start node where the tracing begins.
 - Click Visit/End Features to specify an end node for the shortest path analysis.
- 7 When you finish, click Trace.

The resulting features are highlighted in the map and listed in the Tracing Result dialog box.

8 Expand the items, select a feature, and do any of the following:

- Select an item and click  .
All features under the selected item are highlighted. To remove the highlighting, click  .
-  Zoom to the highlighted feature in your map. You can also click Zoom On Click to automatically zoom to a feature when you click it.
-  Open the feature class form to see feature information.
-  Delete the selected feature from the database.

To create a stop condition

- 1** In the Workflows pane, under Stop Condition Editor, click Add to add a stop condition.
- 2** Click New. Enter a name.
If you do not enter a name, the stop condition is used for the current process but is not stored for later use.
- 3** In the Stop Condition Editor dialog box, select a feature class.
- 4** Select an attribute in that feature class.
- 5** Enter a value for the attribute. Note that there is no blank space between the value and the operator.
If the network trace finds a feature of the selected feature class with the specified attribute, the network trace stops at that feature.
- 6** Click OK to save the stop condition.

In the Stop Condition Editor dialog box, the list displays only the stop conditions that are not assigned to any tracing template.

To edit a stop condition in the Stop Condition Editor

Note that the Stop Condition Editor list box displays only the stop conditions that are not assigned to any tracing template.

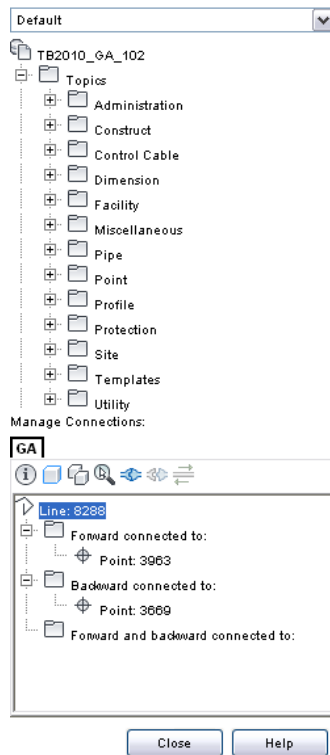
- You can only edit the stop conditions that you have created while executing a workflow.
- You cannot edit stop conditions that other users have created while executing a workflow.
- You cannot edit stop conditions that have been created using Topobase Administrator, or that have been created by the system.

Managing Logical Connections


Use Manage Connections to view and edit logical topologies. The Manage Connections area displays the connectivity tree of features that are part of a logical topology.

When you digitize a feature, it is automatically connected to other features that lie within the specified tolerance. To connect features manually, use the Manage Connections area

The Manage Connections area is available if a logical topology is defined.






To view logical connections

- 1 In Topobase Explorer, expand a topic node and select a feature.
- 2 On the main toolbar, click  Manage Connections.

NOTE You can also view connections from within a feature class form. Open the form for a feature class that is part of a logical topology. On the form toolbar, click Manage Connections.

The Manage Connections area displays all connections that are defined to and from the selected feature. The root node is the selected feature.

- 3 Do any of the following:
 - Connect features. Click . In the drawing, select the features to connect to the selected feature.

- Disconnect features. Select the connected feature in the tree area and click .
- Set or modify the flow direction of the connection. Select the feature and click .

For more information about configuring logical topologies, see the “Topobase Administrators Guide”.

See also:

- [Navigating in Topobase Web](#) (page 4)

Construction and Calculation

4

Using Construction Tools

You can use construction tools to directly operate on features in the database. These tools are sometimes referred to as COGO (coordinate geometry) tools. Existing coordinates are retrieved and results are directly stored in the database. You can also generate detailed construction reports.

The construction elements (lines, points, and text) appear temporarily with the help of special construction feature classes. They are removed from the drawing as soon as you save the new elements and quit or close the dialog boxes.

NOTE For Arc Intersections, when you calculate the tangentials, you cannot create dimensioning.

See also [Setting COGO and Dimensioning Document Options](#) (page 46), and the “Topobase Administrator Guide.”

In Topobase Web, you can use construction commands in a document that is 3D-enabled. However, the following commands do not support 3D:

- Arc Intersection
- Orthogonal Calculation
- Polar Calculation
- Offset
- Right Angle Course

- Free Standpoint

In Topobase Web, you cannot digitize 3D line strings.

Setting Up Construction Functions

To make Topobase construction functions available, the Topobase administrator must do the following:

- Set general settings (application options) with Topobase Administrator. For more information, see the “Topobase Administrator Guide.”
- Add the construction feature classes in Topobase Administrator, Document Settings.
- Define an appropriate stylization in the display model. For more information on styling features, see the “AutoCAD Map 3D Users Guide.”




See also:

- [Construction Reference](#) (page 74)
- [Arc Intersection Workflow](#) (page 84)

Construction Reference

Construction Toolbar

The Topobase construction commands can be started from the Construction toolbar.

Icon	Description
	Intersection. See Constructions: Intersection (page 78)
	Arc Intersection. See Constructions: Arc Intersection (page 82)
	Orthogonal Calculation. See Constructions: Orthogonal Calculation (page 85)



Polar Calculation. See [Constructions: Polar Calculation](#) (page 89)



Orthogonal Projection. See [Constructions: Orthogonal Projection](#) (page 92)



Snap/Trim. See [Constructions: Snap and Trim](#) (page 95)



Split. See [Constructions: Line Processing \(Vertices\)](#) (page 99)



Add Vertex. See [Constructions: Line Processing \(Vertices\)](#) (page 99)



Remove Vertex. See [Constructions: Line Processing \(Vertices\)](#) (page 99)



Insert Point. See [Constructions: Line Processing \(Points\)](#) (page 103)



Extract Point. See [Constructions: Line Processing \(Points\)](#) (page 103)



Offset. See [Constructions: Offset \(Line Calculation\)](#) (page 97)



Right Angle Course. See [Constructions: Right Angle Course](#) (page 107)



Free Standpoint. See [Constructions: Free Standpoint](#) (page 111)



Center. See [Constructions: Center](#) (page 113)



Join Lines. See [Constructions: Join Lines](#) (page 110)



Report. See [Constructions: Reports](#) (page 114)

Navigating the Construction Commands

Construction: General Guidelines

Keep the following in mind as you use the construction commands:

- When you start a construction command, you are prompted to select elements in the drawing or in the map. Always watch the Autodesk MapGuide status line!
- All elements of the calculation (such as arcs, circles, and points) appear temporarily in the drawing.
- See [Using Construction Tools](#) (page 73).

NOTE The elements have to be Topobase features, which means they have to be stored in the database.

- As soon as the required elements are selected, the focus changes to the construction dialog box.

NOTE If you press Esc instead of selecting an element, the construction dialog box is displayed immediately without prompting.

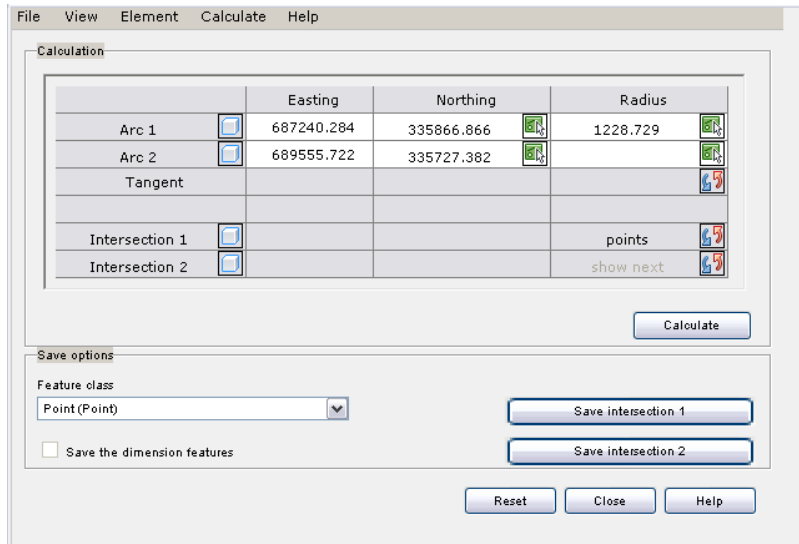
- The construction dialog box displays all construction elements, parameters, and results. For example, it displays point coordinates, radius, and distance. You can modify the parameters and calculate again. See [Construction Dialog Boxes and Menus](#) (page 76).

NOTE Some construction functions have no dialog box. They are controlled by the command line.

- After the re-calculation, the drawing is updated with the new result.
- You can save the result in the database.



Construction Dialog Boxes and Menus

This illustration of the Arc Intersection dialog box shows the dialog controls and components.



Construction dialog box

Construction dialog boxes contain the following elements:

Element	Description
White text box	Edit to modify values.
Shortcut menu	Right-click any text box in the construction dialog boxes to view its shortcut menu.
Gray text boxes	View the results of calculations.
Feature Class list box	Select the feature class to save the calculated object to (point or line string feature class). This list displays all appropriate feature classes for the workspace. For example, if the result is a point, it displays point feature classes.
	Switch to the drawing and select an element. You can also acquire distances, but not angles or orthogonal projections.
	Change the element's orientation or toggle between two possible results.



Highlight a result or a construction element.



Modify or determine an abscissa value in the drawing.

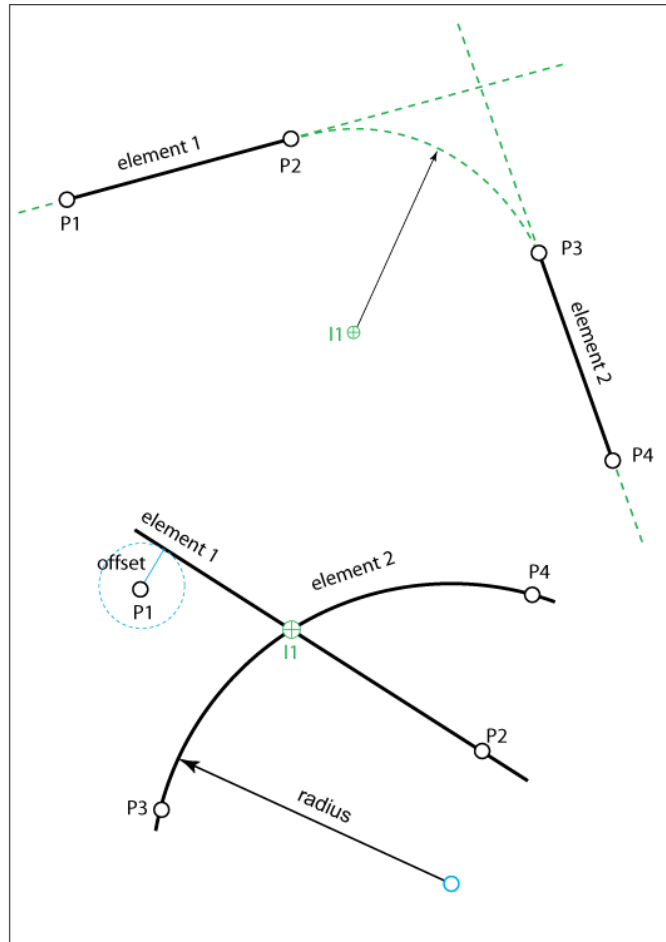
New	Reset all entries and start a new calculation. When prompted, identify the required elements.
Calculate	Start a calculation, for example, after modifying parameters. The result is not stored in the database, but the display in the drawing is updated.
Save	Save the result in the database. If a calculation has more than one result, you can save result 1 or result 2.
Save The Dimension Features	Automatically save dimensioning for the calculated features. Available for Orthogonal Calculation and Arc Intersection. Use the COGO And Dimensioning document options to specify the dimensioning feature classes. See Setting COGO and Dimensioning Document Options (page 46). This option is available if the document contains the Dimension extension and the COGO and Dimensioning options have been set and saved.
Reset	Reset all entries and start a new calculation.
Close	Close the dialog box and exit the calculation.
Status row	View the number of intersections or tangents for the calculation.

See also:

- [Construction: General Guidelines](#) (page 76)

Constructions: Intersection

Use the intersection function to calculate the intersection of two elements (straight lines or circular arcs) or to connect two elements by a tangent or circle (tangential).



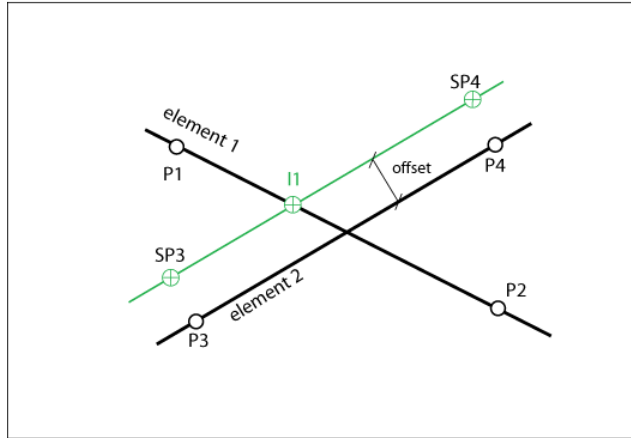
Intersections between lines and arcs

Intersection Elements

Specify intersection elements in any of these ways:




- Click in the drawing.
- Specify two points
- Identify an element and shift it by an offset value.





- Specify point and orientation.



Intersection Elements


Use the dialog box to modify the parameters.

Element	Description
Element 1 Element 2	<p>Element 1 and 2 can be a straight line or a circular arc.</p> <p>Click  to show the element in the drawing.</p> <p>Click  to identify another element in the drawing.</p> <p>Specify an offset value to shift the element.</p> <p>Specify an azimuth value to rotate the element.</p>
Point 1 Point 2	The orientation of element 1 is indicated by the direction of Point 1 and Point 2.
Point 3 Point 4	The orientation of element 2 is indicated by the direction of Point 3 and Point 4.
Easting Northing Elevation	Coordinates of the points. You can edit the coordinates or use  to select another point.



Radius	Modify as needed. Use  to switch between long arc and short arc.
Azimuth	Use the azimuth to rotate the element. For tangents the azimuth value specifies in which quadrant the result is located. Use  to reverse the line (add 180 degrees to the azimuth value).
Intersection 1 Intersection 2	Intersections with arcs have more than one result. Use the Tangentials  to toggle between point and tangents calculation. For tangentials, if you define tangents, you can specify a radius. Enter 0 or leave the field empty to calculate a straight line. If you define a radius you can use the Show Next  to show all possible locations of the tangential arc.

Intersection Workflow

Sample workflow for an intersection between two straight lines:

- 1 In Topobase Web, in the Construction toolbar, click  Intersection.
- 2 In the map, select element 1. The element, with its determining points P1 and P2, is highlighted in the drawing.
- 3 Select element 2. The element, with P3 and P4, is highlighted. The Intersection dialog box is displayed.
- 4 In the dialog box, select the feature class in which to store the intersection point.
- 5 Click Save Inters. 1 to store the point in the database.
You can now quit or calculate other intersections.
- 6 Click New to reset the intersection parameters. You can now select new elements in the map.
- 7 Select element 1.
- 8 Select element 2.

After you select element 2, the Intersection dialog box becomes active again. Use the dialog box to modify the intersection parameters.

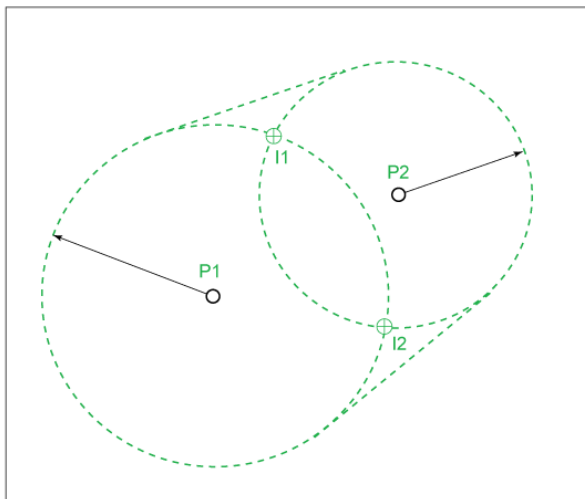
- 9 In the Intersection 1 row, click  to switch to Tangential mode.
- 10 Enter a radius for the tangent to be calculated.
- 11 Click Calculate to calculate the tangent with the modified parameters.
- 12 Click the Show Next  to show all possible locations of the tangential arc.
- 13 Select the feature class in which to store the tangent.
- 14 Click Save Inters. 1 to store the arc in the database.

See also:

- [Intersection Elements](#) (page 79)
- [Constructions: Intersection](#) (page 78)
- [Setting COGO and Dimensioning Document Options](#) (page 46)

Constructions: Arc Intersection

Use the arc intersection function to calculate intersections of two circular arcs. You also can determine the tangents to the arcs.



Arc Intersection elements


When you use Orthogonal Calculation or Arc Intersection, you optionally create dimensioning for the calculated points. In the construction dialog box, under Save Options, select Save The Dimension Features.




For Arc Intersection, when you calculate the tangentials, you cannot create dimensioning.

See also:

- [Setting COGO and Dimensioning Document Options](#) (page 46)

Arc Intersection Elements

Element	Description
Arc 1 Arc 2	Specify the arc by a center point P1 or P2 and a radius.
Easting, Northing	Edit the coordinates in the dialog box or use  to select another point.


Radius	You can edit the arc radii values in the dialog box or use  to define it in the drawing.
Tangent	If the intersection type is Tangentials, you can enter a radius. Set Radius to NULL or 0 for straight-line tangents.
Intersection 1	I1
Points/Tangentials	Use  to change between intersection types (Points or Tangentials).
Intersection 2	I2
Show Next	If you calculate tangents with a radius, you can use the Show Next  to show all possible locations of the tangential arc.
Save The Dimension Features	Save dimensioning for the calculated features automatically. Use the COGO And Dimensioning document options to specify the dimensioning feature classes. See Setting COGO and Dimensioning Document Options (page 46).



See also:

- [Constructions: Arc Intersection](#) (page 82)
- [Arc Intersection Workflow](#) (page 84)

Arc Intersection Workflow

Sample workflow for intersection and tangent calculation:

- 1 In Topobase Web, in the Construction toolbar click  Arc Intersection.
- 2 In the map, select the center of arc 1.
- 3 Select the radius of arc 1.

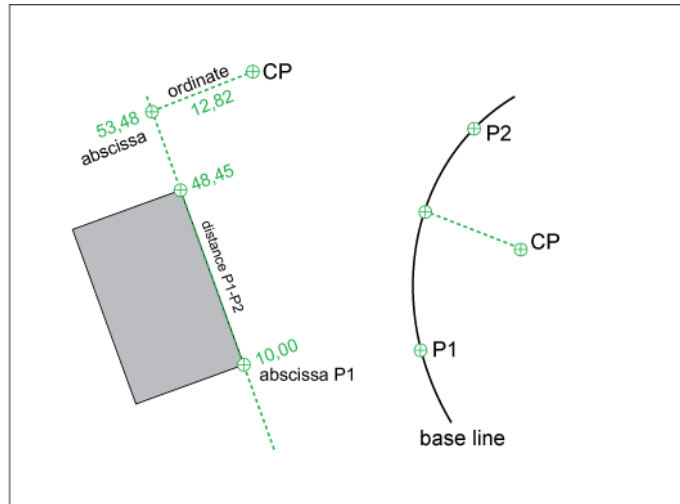
- 4 Select the center of arc 2.
- 5 Select the radius of arc 2.
- 6 In the construction dialog box, select the feature class.
- 7 Click  in the Intersection 1 row to switch the intersection type to Tangentials.
- 8 To calculate an arc, in the Tangent line, enter a radius for the tangents. The feature class list box now shows the available line string feature classes.
- 9 Click  in the Intersection 1 row to switch the intersection type to Points.
- 10 From the menu bar, choose File ► Save to save both results. You can now quit or calculate other intersections.
- 11 Click New to reset the arc intersection parameters. Select new elements in the map.

See also:

- [Constructions: Arc Intersection](#) (page 82)
- [Arc Intersection Elements](#) (page 83)

Constructions: Orthogonal Calculation

Use the Orthogonal Calculation function for orthogonal surveying. The base element is represented by either an existing line or by using two points which can lie aside. When the calculation is performed, measured and calculated dimensions are taken into account.



Orthogonal calculation elements




When you use Orthogonal Calculation or Arc Intersection, you optionally create dimensioning for the calculated points. In the construction dialog box, under Save Options, select Save The Dimension Features.






You can use Orthogonal Calculation to measure distances. See [Constructions: Tips and Tricks](#) (page 115).

See also:

- [Setting COGO and Dimensioning Document Options](#) (page 46)

Orthogonal Calculation Elements

Element	Description
Element	Base line for orthogonal surveying.
	Click  to view the element in the drawing.
	Click  to identify another base line.
	Enter an Offset value or use  to shift the line.
	Enter a Radius value if your base line is an arc.

	Enter an Azimuth value or use  to modify the orientation of the base line.
Point 1 Point 2	Specify the base line by two points (P1 and P2) and a radius (for a straight-line radius, enter 0). With a point Offset value, you can specify a base line that is tangent to a circle with that radius. If you click a base line in the drawing, the coordinates of the next two vertices are inserted in the dialog box.
Easting and Northing	Edit the coordinates in the dialog box or use  to select another point.
Constructed	The coordinates of the calculated point. Use  to determine the abscissa and ordinate of an existing point. This is useful for calculating another point with delta values.
Abscissa Ordinate	Enter the abscissa and ordinate of the new point. Enter negative ordinates to determine points that are left to the base line. Use  in the Constructed row to transfer the values of an existing point into the dialog box. Use  in the abscissa or ordinate row to specify the value in the drawing.
Value Delta	Specify the values with an absolute number or with delta values related to the current value. This is useful for calculating a number of points with the same abscissa or ordinate distances. Enter a delta value and click Calculate. The new value is calculated by adding the delta to the current value. Click Calculate again to add the delta value again.
Distance	Base line properties
Measured	Distance that was measured in the field.


Calculated	Calculated distance of the base line points P1-P2; read-only.
Factor	Enter a measured distance to calculate a factor, which is used to adjust the differences between calculated and measured distance proportional to the abscissa values.
Abscissa P1	Abscissa value at point 1; the default is 0.00. If your measurement did not start with the abscissa 0.00, enter a new value. If your actual starting point is different from the indicated P1, use Abscissa P1 to select this point in the drawing. If the point is not on the selected base line, the projection point is calculated.
Save The Dimension Features	Save dimensioning for the calculated features automatically. Use the COGO And Dimensioning document options to specify the dimensioning feature classes. See Setting COGO and Dimensioning Document Options (page 46).


See also:

- [Constructions: Orthogonal Calculation](#) (page 85)
- [Orthogonal Calculation Workflow](#) (page 88)
- [Setting COGO and Dimensioning Document Options](#) (page 46)

Orthogonal Calculation Workflow

Sample workflow to calculate orthogonal points:

- 1 In Topobase Web, in the Construction toolbar click  Orthogonal Calculation.
- 2 In the map, select the base element. The line is highlighted in the drawing with the abscissa values at the starting and end point. The construction dialog box opens.

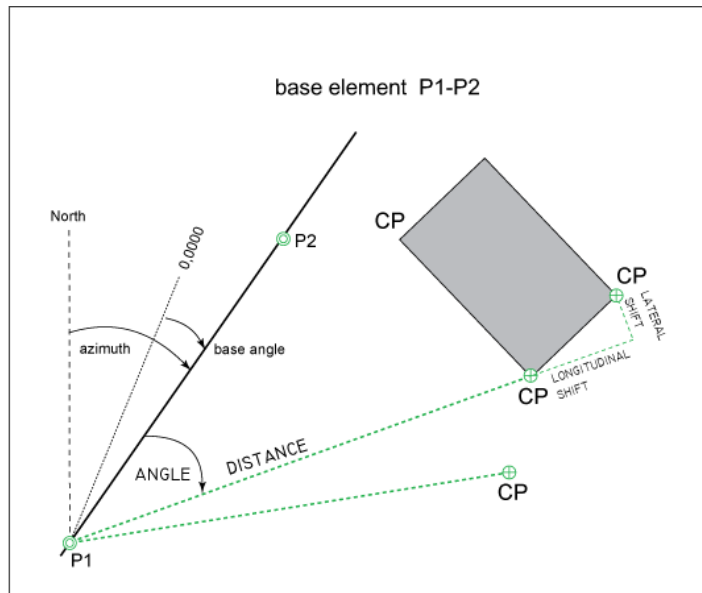
- 3 In the construction dialog box, click  for the Azimuth column to interchange the start and end points.
- 4 To calculate new points, enter the abscissa and ordinate value and click Calculate. The result is highlighted in the drawing.
- 5 To save the new point in the database, select a feature class and click Save Point.

See also:

- [Constructions: Orthogonal Calculation](#) (page 85)
- [Orthogonal Calculation Elements](#) (page 86)
- [Setting COGO and Dimensioning Document Options](#) (page 46)




Constructions: Polar Calculation



Use the Polar Calculation function for polar surveying. The base element is represented by either an existing line or by using two points which can lie aside.



Polar calculation elements

Polar Calculation Elements

Element	Description
Element	<p>Determine the base line for polar surveying with a station P1 and a connection point P2.</p> <p>Click  to identify another base line.</p> <p>Enter an Offset value or use  to shift the line.</p> <p>Enter an Azimuth value or use the Azimuth  to interchange the start and end points.</p>
Point 1	P1: observing station.
Point 2	P2: connecting point to determine the base line. If you select a polyline, the vertices nearest to the click are used.



Easting and Northing	Edit the coordinates in the dialog box or use  to select another point.
Offset	Specify the base line with an offset to the selected element.
Azimuth	Azimuth of the base line (angle between base line and north).
Constructed	Coordinates of the calculated point, target point. Use  to determine the distance and angle of an existing point. This is useful for calculating another point with delta values.
Distance	The measured distance between the station and new point.
Angle	The measured angle (direction) to the new point calculated point (reading from field measurement).
Value; Delta	Specify the values with an absolute number or with delta values related to the current value. This is useful for calculating a number of points with the same distances or angles. Enter a delta value and click Calculate. The new value is calculated by adding the delta to the current value. Click Calculate again to add the delta again.
Longitud. Shift	Enter a longitudinal offset.
Lateral Shift	Enter a lateral offset (rectangular to the P1-calculated point line)
Base Angle	The measured angle to the base line point P2

See also:

- [Constructions: Polar Calculation](#) (page 89)
- [Polar Calculation Workflow](#) (page 92)

Polar Calculation Workflow

Sample polar calculation workflow:

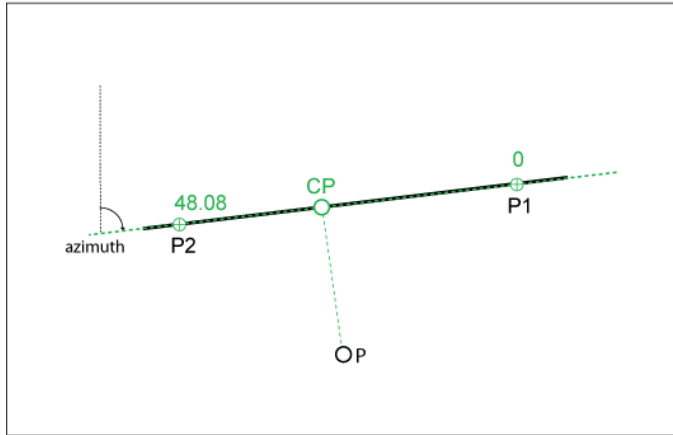
- 1 In Topobase Web, in the Construction toolbar, click  Polar Calculation.
- 2 In the map, select the base element.
The line is highlighted in the drawing with the distance between station and connection end point. The construction dialog box opens.
- 3 In the construction dialog box, click  for the Azimuth column to interchange the station and connection points.
- 4 Enter the base angle.
- 5 To calculate new points, enter the distance and angle value and click Calculate.
The result is highlighted in the drawing.
- 6 To save the new point in the database, select a feature class and click Save Point.

See also:

- [Constructions: Polar Calculation](#) (page 89)
- [Constructions: Polar Calculation](#) (page 89)





Constructions: Orthogonal Projection



Use the Orthogonal Projection function to determine the orthogonal projection point on lines and arcs.



Projection elements

Orthogonal Projection Elements

Element	Description
Element	<p>Base line for orthogonal projection: P1 – P2</p> <p>Click  to identify another base line.</p> <p>Enter an Offset value or use  to shift the line.</p> <p>Enter a Radius value if your base line is an arc.</p> <p>Enter an Azimuth value or use  to modify the orientation of the base line.</p>
Point 1	<p>If the base element is an arc (radius is not null), use  to switch between a long and short arc.</p>
Point 2	P2


Easting Northing Elevation	Edit the coordinates in the dialog box or use  to select another point.
Point P	P: Point to be projected. Use  to select another point.
Projection	Coordinates of the projected point on the line.
Distance Measured Calculated	Length of the base element (the distance between P1 and P2). Enter a measured value to calculate a factor for adjusting the resulting abscissa.
Abscissa	The abscissa value of the projection line (ordinate = 0,00).
Abscissa P1	See Also Constructions: Orthogonal Calculation (page 85)

See also:

- [Constructions: Orthogonal Projection](#) (page 92)
- [Orthogonal Projection Workflow](#) (page 94)

Orthogonal Projection Workflow

Sample orthogonal projection workflow:

- 1 In Topobase Web, in the Construction toolbar click  Orthogonal Projection.
- 2 In the map, select the base element.
- 3 Select the projection point.
The construction elements are highlighted in the drawing. The construction dialog box opens.

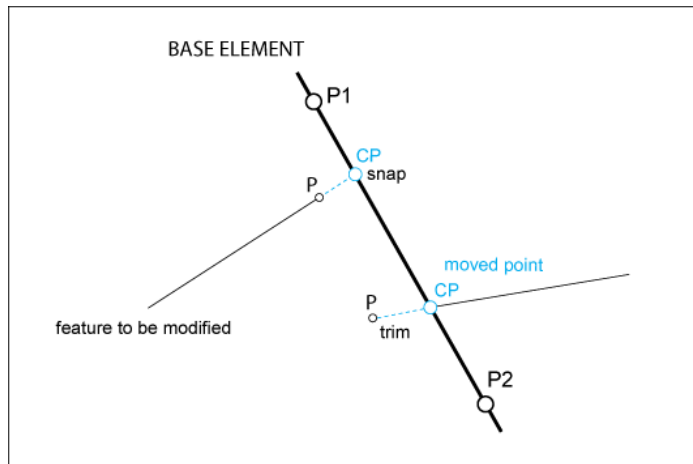
- 4 To save the new point in the database, select a feature class and click Save Point.

See also:

- [Constructions: Orthogonal Projection](#) (page 92)
- [Orthogonal Projection Elements](#) (page 93)


Constructions: Snap and Trim

Use the Snap And Trim function for line feature processing. You can trim or extend a line so the end point lies exactly on a base line. This is often used to create correct topologies or inaccurate data acquisition.



Snap and trim elements

Snap and Trim Elements


Element	Description
Element	<p>The base line for trimming or extending, determined by points P1 and P2.</p> <p>Click  to identify another base line.</p>



Enter an Offset value or use the Graphic icon to shift the line.

Enter a Radius value, if your base line is an arc. If the radius is not null, you can use



to switch between long and short arc.

Enter an Azimuth value or use  to modify the orientation of the base line.


Point 1	P1: start point of the base line.
Point 2	P2: end point of base line.
Easting Northing Elevation	Edit the coordinates of the base line in the dialog box or use  to select another point.
Point P	P: Point of the line to modify. By default, this is the first vertex of the line definition.
Index	Use this value to switch to another vertex of the selected line. Index = 0 indicates the first vertex, index 1 the second, and so on.
Feature ID	Use  to select another point.
Value	FID of the feature to be modified.
Moved P	The new end point of the line after the trim or snap process.
Feature Class	The current feature class. The result of snap or trim overrides the existing feature.

See also:

- [Constructions: Snap and Trim](#) (page 95)
- [Snap and Trim Workflow](#) (page 97)

Snap and Trim Workflow

Sample Snap And Trim workflow:

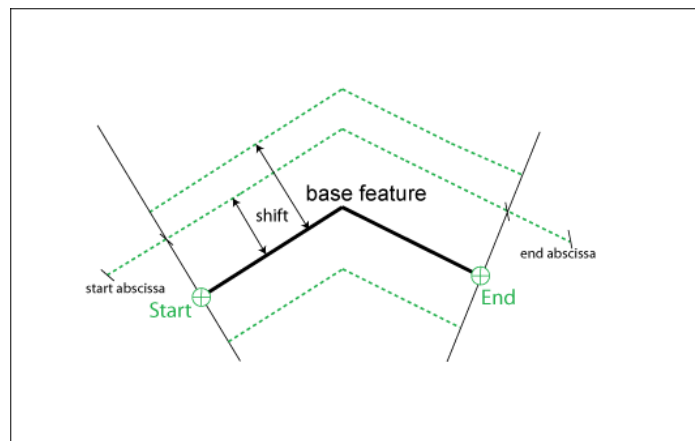
- 1 In Topobase Web, in the Construction toolbar click  Snap.
- 2 In the map, select the base element.
- 3 Select the line feature to modify.
The elements are highlighted in the drawing. The construction dialog box opens.
- 4 To save the modifications in the database, click Save Feature.

See also:

- [Constructions: Snap and Trim](#) (page 95)
- [Snap and Trim Elements](#) (page 95)





Constructions: Offset (Line Calculation)

Use the Offset function to calculate lines with any offset, based on an existing line.



Line offset calculation

Line Offset Calculation Elements


Element	Description
Base Feature	The base line for calculations (offset = 0.00). Use  to select another base line.
Add	Add definition rows for the offset lines. Specify the distance to the base line by clicking.
Shifted Line x	Definition rows for the offset lines. Click Add to add more lines.
Start abscissa End Abscissa	Use these values to extend or shorten the offset line in relation to the base feature. Use  or enter a new value.
Shift	The offset value. The initial value is specified in the drawing. Edit this value, for example, to set it to an even value.
	Specify the abscissa value in the drawing.
	Delete a definition row.

See also:

- [Constructions: Offset \(Line Calculation\)](#) (page 97)
- [Line Offset Calculation Workflow](#) (page 99)

Line Offset Calculation Workflow

Sample Line Offset Calculation workflow:

- 1 In Topobase Web, in the Construction toolbar click  Offset.
- 2 In the map, select the base line. You can select only lines that are saved in the database.
The line and its start and end point are indicated in the drawing and the construction dialog box opens.
- 3 In the construction dialog box, click Add.
- 4 In the map, click to specify the distance of the first offset line. Click for the next line. Right-click to finish the entry.
- 5 In the construction dialog box, modify the parameters of the shifted lines.
- 6 Click Calculate to see the results in the drawing.
- 7 Select a feature class.
- 8 Click Save Features to save your modifications to the database.

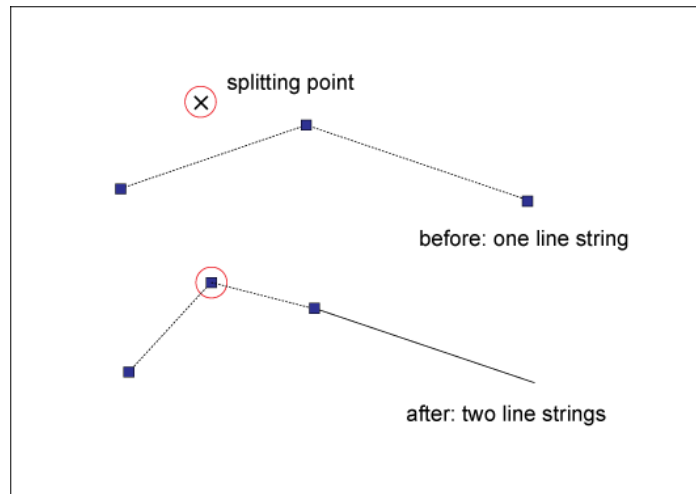
See also:

- [Constructions: Offset \(Line Calculation\)](#) (page 97)
- [Line Offset Calculation Elements](#) (page 98)




Constructions: Line Processing (Vertices)

You can add or remove vertices of lines that are stored in the database.

NOTE These functions are controlled only by the Autodesk MapGuide status line.




Line processing example: Split line creates two line features.

Icon	Description
	Use Split to add a vertex and split an existing line into two line features. Both inherit the attribute data of the existing feature. You can select an existing point or digitize any point in the drawing.
	Use Add Vertex to add a vertex to a line feature. Unlike the Split function, there will be one line feature with a new vertex. Select an existing point or digitize any point in the drawing.
	Use Remove Vertex to remove a vertex.

Line Processing Workflows (Vertices)


To use the first two workflows, you must have a Topobase line feature with two or more vertices.

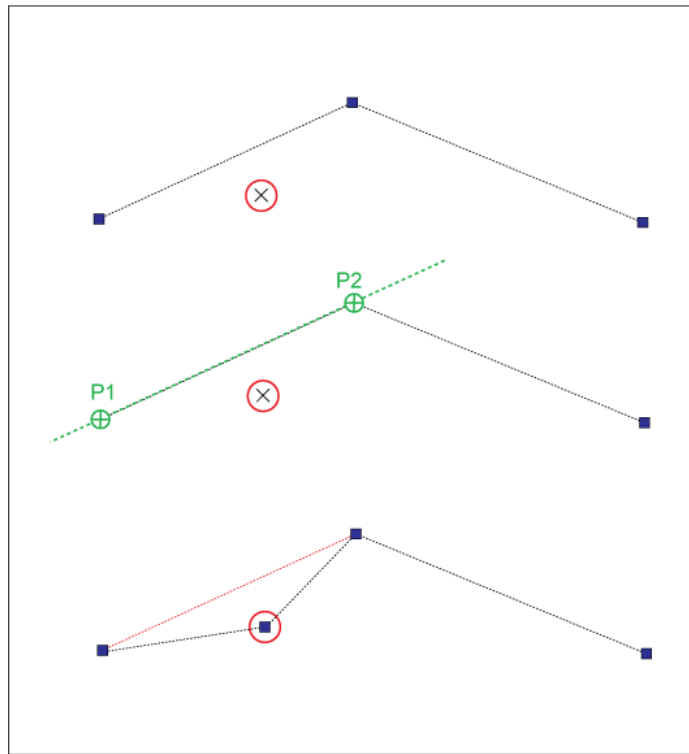
Sample Split workflow:

- 1 In Topobase Web, in the Construction toolbar click  Split.
- 2 In the map, select the feature to split.
- 3 Select or digitize the splitting point.

NOTE There are two separate line features after the calculation. Each new feature inherits the attribute data of the old deleted feature.

Sample Add Vertex workflow:


- 1 In Topobase Web, in the Construction toolbar click  Add vertex.
- 2 In the map, select the feature.
- 3 Select or digitize the point to insert.



Line processing example: Add vertex inserts a new vertex. The lines move to the point.

To use this workflow, you must have a Topobase line feature with three or more vertices.

Sample Remove Vertex workflow:

- 1 In Topobase Web, in the Construction toolbar click  Remove Vertex.
- 2 In the map, select the feature.
- 3 Select the point to remove.
You do not need to snap the point; you can click in the neighborhood of the vertex.

See also:

- [Constructions: Line Processing \(Vertices\)](#) (page 99)

Constructions: Line Processing (Points)

When you process Topobase point and line features, keep in mind the difference between a vertex and a point.



- A vertex is a component of a line feature whose coordinates are stored with the line feature.
- A point is a Topobase feature, independent from lines. Every line has a vertex at its start point, but point features do not necessarily have one.

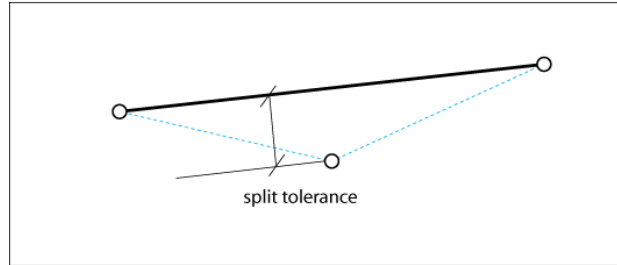
The following functions consider the relation between line and point features. Use them to improve the consistency of network geometry, to create correct topological relations, or to adjust inaccuracies due to measurement.

You can insert an existing point into a line feature and optionally split the existing line into two line features.

You can extract an existing point from a line feature and connect the two existing lines into one.

NOTE These functions are controlled only by the Autodesk MapGuide status line.

Icon	Description
	Use Insert Point to move an existing point that lies within a tolerance exactly on the line feature.
	Use Extract Point to remove a point from a line and delete it from the database. You can remove the point only if it lies on a straight line within a split tolerance.

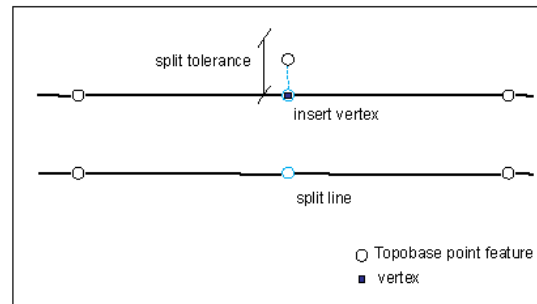


Points can be inserted or extracted only if they lie within the split tolerance.

Constructions: Insert Point

The Insert Point command calculates new point coordinates that lie exactly on the line. At the insertion point, a new vertex is inserted. The vertex indicates the relation between point and line for further processing.

You can split the line at the insertion point. The existing line feature is deleted and two new line features are created instead. Specify whether to split a line or not in the application options. See [Setting COGO Options](#) (page 44).



A point is inserted into a line. Its coordinates are moved to the line.

The insertion is documented in the database. An inserted point is saved with a special reliability attribute.

If the difference between the old and new position of the point exceeds the split tolerance, the point is not inserted and a message appears.

You can set the split tolerance in the application options. See [Setting COGO Options](#) (page 44).

You can insert a point only under certain conditions. If a condition is not fulfilled, one of the following messages appears in the command line:

- The distance from point to line is too large: You exceeded the split tolerance.
- There is no suitable point at the vertex before the point: You can insert a point only if there are points at the vertices before and after the insertion point.
- The line already has a vertex at this position: You cannot insert a point at an existing vertex.
- The spatial tolerance of the selected line must be smaller than the split tolerance: The Topobase Administrator set the spatial tolerance when creating the database.


See also:

- [Constructions: Line Processing \(Points\)](#) (page 103)

Insert Point Workflow

To use this workflow, you must have a Topobase line feature with point features at the start and end of the line segment and a point feature that lies within the split tolerance.

Sample Insert Point workflow

- 1 In Topobase Web, in the Construction toolbar, click  Insert Point.
- 2 Select the line.
Watch the Autodesk MapGuide status line.
- 3 Select the point feature to insert.

If the conditions are fulfilled, the point is inserted. If not, a message in the command line informs you. The calculation is cancelled.

See also:

- [Constructions: Line Processing \(Points\)](#) (page 103)
- [Constructions: Insert Point](#) (page 104)

Constructions: Extract Point

The Extract Point command removes a point from a line. The point is deleted from the database and a new line feature is built.

You can extract a point only under certain conditions. If a condition is not fulfilled, one of the following messages appears in the command line:

Split tolerance: A point can be extracted only if it is within the split tolerance of its adjacent points (orthogonal projection on the new straight line).

The distance to the line being built is too large: The distance of the point to the new line feature is greater than the split tolerance.

The line has no vertex at this position: You can extract a point only if there is a line vertex at the same location. Topobase uses the vertex to detect whether the point has a relation to the line.


See also:

- [Constructions: Line Processing \(Points\)](#) (page 103)
- [Constructions: Insert Point](#) (page 104)

Extract Point Workflow

To use this workflow, you must have a Topobase line feature with two segments and point features at each vertex. The middle vertex must lie on the straight line, within the split tolerance.

Sample Extract Point workflow:

- 1 In Topobase Web, in the Construction toolbar, click  Extract Point.
- 2 Select the line.
Watch the Autodesk MapGuide status line.
- 3 Select the point to extract.

If the conditions are fulfilled, the point is extracted. The point is deleted from the database and a new line is built.

If the point cannot be extracted, a message in the command line informs you. The calculation is cancelled.

See also:

- [Constructions: Line Processing \(Points\)](#) (page 103)
- [Constructions: Extract Point](#) (page 106)

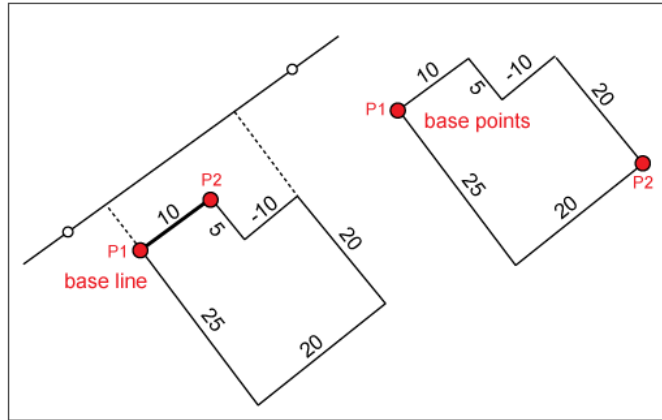
Constructions: Right Angle Course

Use the Right Angle Course function to construct line definitions for buildings. At least two coordinates (existing points) must be defined. A right angle (outline size) must be measured between the known points.

You can construct the line in either of two modes:




- **Point Mode:** Use two arbitrary corner points that are connected by measured sections.
- **Base Line Mode:** Starting with two points, specify the base line for further sections.

The Topobase Administrator can specify the construction mode in the application options. For more information, see the “Topobase Administrator Guide.”



Right Angle Course. Construct a line feature from measured distances based on corner points.

Right Angle Course Elements

Element	Description
Point 1	The base line for calculations (offset = 0.00). Use  to select another base line.
Point 2	Add definition rows for the offset lines. Specify the distance to the base line by clicking.
Easting, Northing	Coordinates of existing points. Use  to select a point in the drawing. Use  to delete the coordinates of a point.
Distance	The measured value.
Calculated Distance Delta	The distance calculated from existing coordinates. The measured sections are adjus-

ted to the existing points. Delta shows the difference between measured and calculated values, so you can decide, whether the object can be described with a right angle course.

Point 3
Point ...

The right angle course can consist of an arbitrary number of measured sections and existing points. For sections, only the distance column is filled out.

Add Sections

Click Add Sections to enter the measured values. The focus changes to the map and you can specify the location with a click or enter the value.

See also:

- [Constructions: Right Angle Course](#) (page 107)
- [Right Angle Course Workflow](#) (page 109)


Right Angle Course Workflow

The workflow varies, depending on the current mode. Determine the current mode by the kind of input the program prompts you for.

If Base Line Mode is active (the default), you are prompted to select the two points that specify the base line. Then the dialog box opens and you can continue adding the measured sections.


If Point Mode is active, you are prompted to select the base point. Then the dialog box opens and you can continue with either a point or a measured section.

Sample workflow for base line mode:

- 1 In Topobase Web, in the Construction toolbar, click  Right Angle Course.
- 2 In the map, select the first point.
- 3 Select the second point.

The construction dialog box opens.

- 4 In the construction dialog box, click Add Sections.
- 5 In the map, enter the measured value.
- 6 Enter as many measured sections as necessary. Press Esc to return to the construction dialog box.

Use  next to the Northing column to identify existing points.

- 7 Select a feature class and click Save to store the line in the database.

See also:


- [Constructions: Right Angle Course](#) (page 107)
- [Right Angle Course Elements](#) (page 108)

Constructions: Join Lines

Use the Join Lines function to join two line features into one feature.

Join Lines Workflow

Sample Join Lines workflow:

- 1 In Topobase Web, in the Construction toolbar, click  Join Lines.
- 2 In the map, select two or more lines.
- 3 Right-click to finish the selection of the lines.

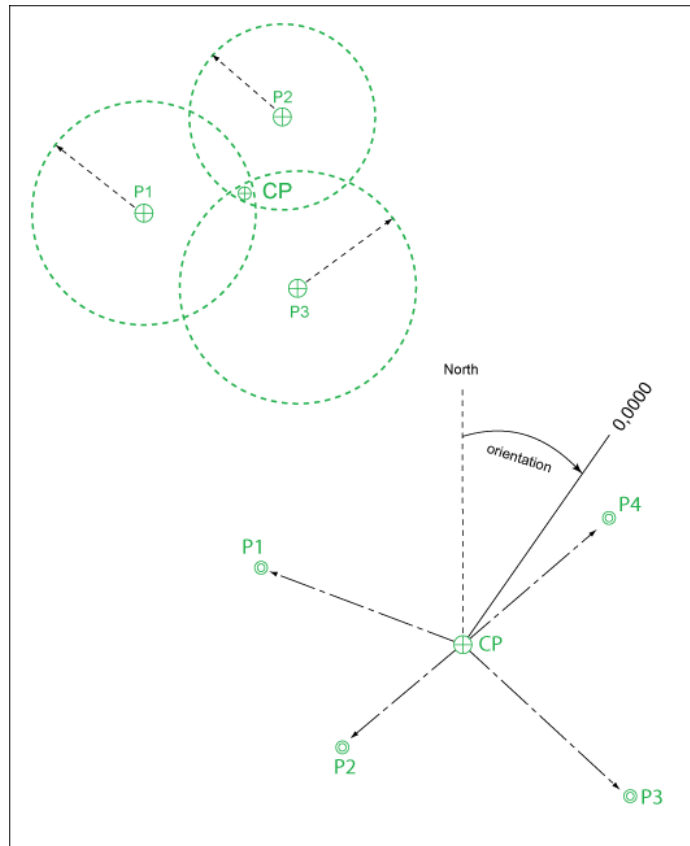
If the selected lines are continuous, they are connected to one line feature.

See also:

- [Constructions: Join Lines](#) (page 110)

Constructions: Free Standpoint




Use the Free Standpoint function to calculate station summaries and free stations, or to calculate the center of three circles. Corrections and residual discrepancies are displayed, as well as the azimuth (orientation).



Calculation of free standpoint

Free Standpoint Elements

Element	Description
---------	-------------


Free PT	The coordinates and the direction are calculated from the measurements (distances and directions). Use  to highlight the point in the drawing.
Point 1 Point 2 Point ...	Connection points with measured distances and directions.
Distance	Measurement (distance). NOTE With 3 points and 3 distances, you can calculate the center of three circles.
Delta	The difference between the measured and calculated distance.
Direction	The measurement (angle)
Ang. Delta	The difference of direction
Add Point	Click to add another connection point. Select the point in the drawing and enter the measurements
	Remove a point
	Select the point or item in the drawing.

See also:

- [Constructions: Free Standpoint](#) (page 111)
- [Free Standpoint Workflow](#) (page 113)

Free Standpoint Workflow

Sample Free Standpoint workflow:

- 1 In Topobase Web, in the Construction toolbar, click  Free Standpoint.
- 2 In the map, select the connection points for your distance and direction measurements.
- 3 Right-click to finish the selection of the connection points.
- 4 In the construction dialog box, enter the measurements.
- 5 Click Calculate.
- 6 Select a feature class and click Save to store the point lines in the database.


See also:

- [Constructions: Free Standpoint](#) (page 111)
- [Free Standpoint Elements](#) (page 111)

Constructions: Center

Use the Center function to determine the center of an arbitrary number of source points. You do not have to have saved source points in the database. The result can be saved in the database.

Center Elements

Element	Description
Center	The coordinates of the calculated center point.
Point 1 Point ...	Source points. Use  to select another point. Click Add Point to add one or more source points. Click Calculate to see the modifications.



Remove a point from the calculation.




Select the point in the drawing.

See also:

- [Constructions: Center](#) (page 113)
- [Center Workflow](#) (page 114)

Center Workflow


Sample Center workflow:

- 1 In Topobase Web, in the Construction toolbar, click  Center.
- 2 In the map, select or digitize the points.
- 3 Right-click to finish the selection of points.
- 4 Select a feature class and click Save to store the point in the database.

See also:

- [Constructions: Center](#) (page 113)
- [Center Elements](#) (page 113)


Constructions: Reports

Use  to print reports of your constructions. You can select by different criteria, for example, job or date.

Construction Report	Description
Job	Select the job.
From To	Select the date range.

Report	Select a report definition.
Preview	Show a preview. You can then print the report or export it to any available file format.

To print a construction report

- 1 In Topobase Web, in the Construction toolbar, click .
- 2 Select a job, for example, Live.
- 3 Select a time period.
- 4 Select a report, for example, Intersection.
- 5 Click Preview.
- 6 In the Topobase Report Preview dialog box, examine the report and its layout.
- 7 Send the report to the desired output target, for example, a printer or a file.

See also:

- [Using Construction Tools](#) (page 73)
- [Navigating the Construction Commands](#) (page 76)

Constructions: Tips and Tricks



Use Document Options to remove the temporary construction feature classes from the database. Use Orthogonal Calculation to measure distances.

To remove temporary construction feature classes

- 1 Click Document ► Document Options.
- 2 Select COGO.

While you are running the construction functions, you can acquire distances and projections.

To measure a distance

- 1 Start Orthogonal Calculation.
- 2 Use  for the Constructed Point to measure the ordinate and abscissa of a point.
- 3 Use the P1  to measure the projection of a point on the base line.

See also:

- [Setting Document Options](#) (page 45)
- [Constructions: Orthogonal Calculation](#) (page 85)

Glossary

5

area topology Description of spatial relationship between geographic area features. Area topologies contain line strings and centroids. In Topobase™, the polygons are generated automatically from the surrounding line strings. Examples of area topologies are parcels, land use, land cover and political boundaries. See also Topology.

centroid A point that indicates a polygon (approximately in the center). In Topobase, centroids are part of area topologies and belong to the surrounding edges (line string feature class). The centroid normally holds the polygon's attribute data. See also Area Topology.

COGO Abbreviation for Coordinate Geometry. COGO functionality provides calculation routines, such as for intersection, projection, orthogonal survey, offset lines, and right angle course.

Display Manager For stylization in Autodesk Map 3D, applies custom styles to selected features and objects. To view the Display Manager task, select Display Manager in the list at the top of the Task Pane. Also used for stylization of Topobase features.

display model In Topobase, you use display models to administer thematic views. A display model definition specifies which set of layer files (feature layers) is loaded into the Display Manager. Also, the display model defines multi map windows and autoload layers.

document In Topobase, a document is an Oracle® database schema with additional settings in the Topobase System user (database server schema TBSYS). A document is an Oracle database user plus settings for menu bars, toolbars and forms. A document must be assigned to a workspace to be accessible by Topobase Client or Topobase Web. You can create, edit, and configure the documents using the Topobase Administrator.

document explorer Control element in the Topobase Client task pane and in the Topobase Web layout. Use the tree view to show the objects that are stored in the database. For different requirements and more clarity these objects can be grouped into explorer groups. Provides a document-specific view to process the following objects: Topics (and feature classes), domains, topologies, intersections, system tables, and workflows. You can define a different document explorers for each document. Also called Topobase explorer.

domain Sets of values. For example, a domain defines the values that are allowed for a feature attribute. Topobase data models store domains in domain tables (**_TBD*). Domain tables are created using the Topobase data model administrator.

explorer group In Topobase Administrator, a configuration that specifies which objects are to be shown in the document explorer. These settings are saved as Explorer Groups.

feature In Topobase, an entity of a feature class. Each feature in a feature class represents a row or record in the feature class table.

feature class In Topobase, the basic class for objects. For example, a parcel is a feature class. In a database, each feature class corresponds to one Oracle table. A feature class can have any number of attributes (Oracle columns), one of which can be of type "geometry". There are general types of feature classes, such as the following:

- Attribute (feature class without geometry)
- Line String
- Polygon
- Point
- Centroid
- Label
- Compound Polygon
- Compound Linestring

You can group several feature classes for each topic. Each feature class contains many entities/instances or records, which are called features.

feature class form Database form to view and edit attribute data stored in Topobase. Forms can be customized with the Topobase form designer.

feature explorer Control element used to display a set of features in a tree view, resulting from a selection, a validation, or a tracing.

graphic connection A connection between Topobase and Autodesk Map or Autodesk MapGuide to display the features. Topobase Client has a graphic connection to Autodesk Map. Topobase Web has a graphic connection to Autodesk MapGuide.

job perimeter Spatial area where a job can be processed. You can use job perimeters to control where the modifications of the current job is allowed. Features outside the job perimeter cannot be processed. Also, you can define feature rules to be applied on the objects within the perimeter.

label In Topobase, any attribute data of a feature can be displayed as text, using label features. Label features are generated by arbitrary select statements that can be defined by the customer and therefore are a flexible way to add inscriptions to the objects. Label definitions (select statements and other settings) are stored in the system table TB_LABEL_DEF. Label definitions can be created or edited using the Topobase data model administrator. Label features can be stylized with the Display Manager by displaying the LABEL_TEXT property.

label definition Select statements that create labels. The label definition 1) queries data from the database and 2) specifies positioning and text orientation. This information is used in the Display Manager for stylization.

label feature class Feature class type used to store label features in the database <feature class name>_TBL. Each feature class (parent feature class) can have exactly one label feature class. The label feature class contains default attributes only, and contains no other specific attributes. It stores a relation to the parent feature class.

label placer Places a label to generate a label feature, to write information into the drawing or the map.

logical topology Description of the relationship of features of any feature classes, both attribute or geometry feature classes. The features need not to be spatially connected. For example, a logical topology connects points with points, lines with lines, lines to points, or attribute features to attribute features. Utility networks are based on logical topologies that connect points (nodes) and lines (edges).

For example, a logical topology can represent a waste water network or electrical transmission lines.

master-detail form Type of feature class form where related records are shown in an embedded sub-form on one or more tabs.

network topology See logical topology.

Polygon Object built of line segments that form an enclosed area. In Topobase, polygons are stored in a polygon feature class.

Position Finder Finds the location of a certain object, such as a building, a parcel, or any other type of feature that has geometry. The geometry found will be the center of a graphic generation or a zoom GoTo. There are several types of search such as Sequential search and Flat search.

profile In Topobase, a longitudinal section of line features. A profile is created by projecting features on an axis.

profile data model Data model consisting of a set of profile system tables and an arbitrary set of profile feature classes. Profile system tables store the basic configuration and settings. Profile feature classes store the components of each profile drawing.

prototype drawing Drawing that stores all used blocks, symbols, regular and other lines, text styles and dimensioning styles.

schema plan A schematic diagram that represents real world features by transforming the original feature geometry to an alternative location, for example by applying a coordinate offset. The schema plan represents the real world features in a clear structure, and preserves topology. A schema plan can either be displayed as overlay to the original features, or in a secondary window. You use Topobase Administrator to define schema plans.

schematic feature In Topobase, schematic features are derived from real world features. They are stored in the database and are used to draw the schema plan. Each schematic feature is associated to its real world feature.

TBMAIN Topobase Main User, which is a Topobase System User with restricted rights. The default name for the Topobase Main User is TBMAIN. To start the application, non-administrator users can optionally connect to the Topobase Main User.

TBSYS Topobase System User. Topobase system database schema. Topobase server component that stores application settings and server-side stored procedures. The default name for the Topobase System user is TBSYS. Application users must be connected to the Topobase System user or to the Topobase Main User TBMAIN to start the application.

template In Topobase, a template is an arrangement of recurrent features. The arrangement includes feature attributes, geometry and connectivity. In Topobase Client, you use templates to place a feature arrangement in one single step.

topic In Topobase, a group of several feature classes. A topic is a collection of feature class tables. Topics can be thought of as containers used to organize feature classes. Considering a data transfer, topics are fully independent of one another. Each topic may have sub-topics. To build a clear and transparent data structure, you can group feature classes into topics, group several topics into main topics, and define feature classes with sub-feature classes. These relations between topics and feature classes serve only as an illustration of the data structure. There is not necessarily an actual relation between the tables.

Topobase Administrator A Topobase basic module, used for Topobase administration. Topobase Administrator contains several components, such as:

- Topobase data model administrator
- Topobase form designer
- Topobase report designer
- Topobase job administrator

Topobase Client A component of Topobase Administrator, used for registering and processing data stored in Topobase through forms and using Autodesk Map for graphic processing.

Topobase data model administrator A Topobase module used to process and establish data structures (topics, tables, attributes, topologies, and intersections) in Topobase. Also, you can define label definitions and dimensioning.

Topobase job All changes in the Topobase data pool can be controlled and performed by exact reports on appropriate processing steps, if they are performed inside a job. Using jobs allows you to control the version. A job includes various processing states (live, pending, project). For each processing state, an application exactly defines which actions are allowed.

Topobase System User Database schema that stores application settings and server-side stored procedures. Default name is TBSYS. Application users must be connected to the Topobase System User to start the application. They can either connect directly to the Topobase System User or use a Topobase Main User which has restricted rights. See also TBSYS and TBMAIN.

Topobase Web The web version of Topobase applications.

topology A geometric shape property in which metrical relations play no role. Topology describes how lines, nodes, and polygons connect and relate to each other, and it forms the basis for spatial analysis as network tracing. In Topobase, topologies can be administered within individual groups of feature classes. They can be defined with the Topobase data model administrator.

topology checker Tool to check topologies. The results are displayed in a tree view, displaying all feature errors.

user A person who works with any Topobase application. Each application user belongs to a group called a user group, with certain tasks and rights. Examples of users: Mr. MILLER, Mr. SMITH, Ms. BAKER; BILLY, TONY, LARRY.

user group A group of users having certain task and rights. Examples of user groups: ADMIN, VIEWER, EDITOR, and so on. A member of a user group can access workspaces only if he has a permission. He may use certain tools and functions and he has certain rights to edit or view the data.

utility model Topobase data model component for utility applications, which provides feature classes and rules for utility networks.

viewport Area of interest for the generate graphic process. A Topobase viewport is a spatial filter on the map.

workflow In Topobase applications, a guide for the user through tasks like acquisition, analysis, and reports.

workspace The central workflow unit in Topobase. For different user groups, such as EDITOR, VIEWER or ADMIN, you can define the appropriate workspaces, with respective roles and rights. A workspace comprises one or more documents.

From the user's point of view, a workspace is the starting point of his work. He must open a workspace to work with any Topobase application. By selecting a workspace, he will load all necessary objects, including the appropriate menus and toolbars, with a single mouse-click. Therefore, he can even access data from different applications, such as land management and wastewater, in arbitrary combinations.

Index

A

- abscissa (for orthogonal survey) 86
- add vertex
 - construction workflow 100
- analysis
 - network 67
- application options
 - setting 42
- application window
 - basic layout 4
 - flexible Fusion layout 7
- arc intersection
 - construction workflow 84
 - constructions 82
 - elements 83
- area topologies 63
 - checking 64
- Area Topology Checker dialog box 64
- Autodesk Topobase Web
 - basic layout 4
 - flexible Fusion layout 7
 - overview 1
 - starting 3
 - tools 4, 7
 - viewers 1
- automatic job conflict validation 58
- azimuth
 - for polar calculation 90
- azimuth (for orthogonal survey) 86

B

- building
 - calculate outline 107

C

- calculations
 - setting precision for 44

- center
 - calculating for three circles 111
 - construction workflow 114
 - coordinates 113
- center construction 113
- centroids
 - finding missing 64
- chronological order
 - viewing jobs by 51
- circle
 - calculate connecting 78
- circles
 - calculating the center of three 111
- COGO
 - dialog box controls 76
 - tools for 73
- COGO and dimensioning
 - options 45
- COGO features
 - options for 46
- COGO options
 - setting 44
- COGO toolbar 32
- concurrent jobs
 - and job states 57
 - resolving conflicts 58
- configuration
 - constructions 73
- conflict management
 - jobs 58
- construction features
 - options for 46
- Construction toolbar 4, 7, 32, 74
- constructions
 - about 73
 - arc intersection 82
 - calculating center coordinates 113
 - center of three circles 111
 - command icons 74
 - dialog box controls 76
 - extract point 103
 - extract points 106

- feature class 73
- free standpoint 111
- general guidelines 76
- insert point 103–104
- intersection 78
- join lines 110
- line offset calculation 97
- line processing (points) 103
- line processing (vertices) 99
- orthogonal calculation 85
- orthogonal projection 92
- polar calculation 89
- polar surveying 89
- projection 92
- removing temporary feature classes 115
- reports 114
- right angle course 107
- setting up 73
- snap and trim 95
- split lines 104
- vertices 99
- coordinate geometry
 - tools for 73
- creating
 - features with attribute data 29
 - features without attribute data 29
 - jobs 53
 - labels 33
 - templates for features 30

D

- data
 - validating 34
- data acquisition
 - templates
 - reference records 37
 - using reference records 37
- Data Checker 34
- date
 - searching 40
- deleting
 - features 32
- Digitize Inner Ring 35
- Digitize New Feature 35

- Digitize New Geometry For Selected Feature 35
- digitizing
 - features with templates 30
- dimensioning 23
 - options for 46
- dimensioning (COGO) 73, 78
- distances
 - measuring 115
- Document Explorer 12
- document options 45

E

- editing
 - features 30
- Electric Explorer 16
- electric explorer options 45
- electric module 18
- electric options 47
- Excel
 - exporting to 27
- explorers 4, 7
 - Document Explorer 12
 - Electric Explorer 16
 - Workflow Explorer 14
- exporting
 - feature data 27
 - to Excel 27
- expressions
 - filter 39
- extract point
 - construction workflow 106
- extract point construction 106

F

- feature class form toolbar 35
- feature classes
 - removing temporary construction classes 115
 - setting options for 43
- feature data
 - editing 30
 - exporting 27

- feature explorer
 - zoom factor for highlighting 43
- features
 - checking data 34
 - creating 29
 - deleting 32
 - digitizing with templates 30
 - editing 30
 - filtering related records 42
 - labelling 33
 - locating 20
 - locating with Position Finder 21
 - locking 58
 - spatial selection 41
 - splitting 33
 - templates for 30
 - unlocking 58
- Filter Manager 40
- filtering
 - jobs 54
- filters
 - additive and OR 38
 - expressions for 39
 - reusing 40
 - saving 40
 - SQL 38
 - tools 38
 - using projections 42
- forms
 - filter mode 38
 - toolbar 35
- free standpoint
 - construction workflow 113
 - elements 111
- free standpoint construction 111
- Fusion layouts 1

G

- gas module 18
- global update 36

H

- Hard Split 33

- historical view
 - for jobs 60

I

- inconsistent data
 - repairing 34
- insert point
 - construction workflow 105
- insert point construction 104
- Inspection Editor 16
- intersection
 - construction workflow 81
 - constructions 78
- intersections
 - performing 34

J

- Job Conflict Explorer 58
- job conflicts
 - resolving automatically 58
 - resolving manually 58
- Job control 49
- Job Explorer 50
 - using to check for job conflicts 58
- Job Manager 51
 - using to check for job conflicts 58
- job options 43
- jobs
 - and Topobase Web 49
 - changing the state of 57
 - conflict management 58
 - creating 53
 - defining the perimeter 53
 - deleting modifications 56
 - filtering 54
 - historical view 60
 - lease options 43
 - leasing 60
 - making available to other applications 60
 - perimeter 43
 - processing 50
 - selecting 49, 54
 - toolbar 50

- transition 57
- viewing by chronological order 51
- viewing by state 51
- viewing for current document 51
- viewing modifications 50
- workflow for 52
- join lines
 - construction workflow 110
 - constructions 110

L

- labels
 - adding to features 33
 - redirecting to parent feature 43
- lateral offset
 - for polar calculations 90
- layouts
 - basic 1
 - flexible Fusion 1
- lease options (jobs) 43
- leasing
 - jobs 60
- Legend tab 7
- line definition
 - creating right angle 107
 - reports 27
- line offset
 - constructions 97
- line offset calculation
 - construction workflow 99
 - elements 98
- line processing
 - construction workflow 100
- lines
 - add vertices 99
 - joining 110
 - remove vertices 99
 - splitting 33
 - trim 95
- locating
 - features in map 20
 - features with Position Finder 21
- locking features 58
- logical topologies 63
 - checking 66

- login page
 - for Topobase Web 3
- longitudinal offset
 - for polar calculations 90

M

- map options 43
- maps
 - plotting 24
- markup 22–23
- multi-user
 - public reference records 37

N

- named projections 42
- network analysis 67
- network topologies 63
 - checking 67
- network topology
 - line processing 103
- Network Tracer dialog box 67
- New Record 35

O

- offset
 - calculating lines with 97
- optimistic feature locking 58
- options
 - COGO 44
 - COGO and dimensioning 45
 - COGO features 46
 - dimensioning 46
 - document 45
 - electric 47
 - jobs 43
 - map 43
 - setting application options 42
 - wastewater 47
- orthogonal surveys
 - elements 86
- orthogonal calculation
 - construction workflow 88

- orthogonal projection 92
 - elements 93
 - workflow 94
- orthogonal surveying 85
- overlay functions 34

P

- partial posting (jobs) 50
- perimeter
 - defining for a job 53
 - display options 43
- pessimistic feature locking 58
- Plot Library 24
- plot templates 24
- point features
 - setting options for 43
- points
 - digitizing and splitting lines 33
 - extracting 106
 - inserting 104
 - options for insertion 44
- polar calculation
 - construction workflow 92
 - elements 90
- polar surveying 89
- polygon/line definition
 - reports 27
- Position Finder 21
- precision
 - setting for calculations 44
- printing
 - construction reports 114
 - maps 24
 - reports 26
- projection
 - construction workflow 94
 - constructions 92
- projections (forms) 42
- propagation
 - see tracing 67
- public reference records 37

Q

- quality checking 34

R

- radius (for orthogonal survey) 86
- records
 - filtering related 42
 - updating globally 36
- redlining 22
- reference records
 - adding data with 37
 - working with - 37
- related features
 - showing 42
- reliability
 - options for 44
- remove vertex
 - construction workflow 100
- Report dialog box 26
- reports
 - constructions 114
 - polygon/line definition 27
 - printing 26
- reusing
 - filters 40
- right angle course 107
 - construction workflow 109
 - setting the mode 44
- right angle course construction
 - elements 108

S

- saving
 - filters 40
- searching
 - using filters 38
- Select Perimeter dialog box 53
- selecting
 - jobs 54
 - spatial 41
- Set Flow dialog box 70
- settings
 - for construction tools 73
- snap and trim
 - construction workflow 97
- snap and trim constructions 95

- snap radius
 - setting 43
- Soft Split 33
- spatial selection 41
- split
 - options for 44
- split lines
 - construction workflow 100
 - constructions 99
 - tolerance 104
- split lines construction 104
- split tolerance
 - setting 44
- splitting
 - features 33
- SQL filter (forms) 38
- station summary 111
- stop condition
 - for network topologies 67

T

- tangents
 - constructing 78
- Task Pane 4, 7
- templates
 - data capture 37
 - digitizing features with 30
 - for data capture (reference records) 37
 - for features 30
 - for plotting 24
 - viewing definitions for 30
- temporary markup 22–23
- toolbars
 - construction 74
 - Construction and Calculation 32
 - feature class forms 35
 - Job Explorer 50
- tools
 - construction 73
- Topobase Electric 18
- Topobase Gas 18
- Topobase report 26
- Topobase Wastewater 16
- Topobase Water 19

- Topobase Web
 - and jobs 49
 - overview 1
 - starting 3
 - viewers 1
- topologies
 - checking area 64
 - checking logical 66
 - checking network 67
 - setting options for jobs 45
- topology
 - overview 63
 - validating 64, 66–67
- Topology Checker dialog box 66
- tracing 67
- Tracing Result dialog box 67
- trim lines 95

U

- undo
 - modifications to a job 56
- unlocking features 58
- updating globally 36
- URL
 - for Topobase Web 3

V

- validating data 34
- vertex
 - adding 99
 - removing 99
- vicinity for digitizing points
 - setting 43
- viewing
 - jobs historically 60

W

- wastewater module 16
- wastewater options 45, 47
- water module 19
- Workflow Explorer 14

- workflows
 - add vertex 100
 - center construction 114
 - extract point 106
 - free standpoint 113
 - insert point 105
 - jobs 52
 - join lines 110
 - line offset calculation 99
 - orthogonal survey 88
 - orthogonal projection 94

- polar calculation 92
- projection 94
- remove vertex 100
- right angle course construction 109
- snap and trim 97
- split line 100

Z

- zoom
 - factor for feature highlighting 43

