



Aquaterra
by **CGS Labs**



EFFICIENT RIVER ALIGNMENT DESIGN





CGS Labs d.o.o.

Brnčičeva ulica 13

1000 Ljubljana

Efficient river alignment design Tutorial

Copyright © 2020 CGS Labs d.o.o. All rights reserved.

Title: **Efficient river alignment design Tutorial**

Document date: 30. 09. 2020

Version: 1.0.

Printing: CGS Labs d.o.o.

T: +386 1 235 06 00

E: info@cgs-labs.com

Internet: www.cgs-labs.com

© 2020 CGS Labs d.o.o., All rights reserved.

Table of Contents

INTRODUCTION	4
1. DEFINE NEW ALIGNMENT	4
1.1 Alignment manager.....	4
2. DESIGN ALIGNMENT	5
2.1 Draw an alignment with tangent polygon	5
2.2 Convert polyline to alignment	6
3.1 BestFit Alignment.....	6
4. DESIGN SAMPLE LINES	7
3.1 Draw sample lines	7
5. DRAPE TO SURFACE	8

INTRODUCTION

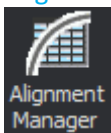
This step-by-step instructions will lead you through the workflow procedure in order to get familiar with the software environment. You will learn how to design a river alignment, sample lines and how to drape alignments to surface. There are three different methods for river alignment design .

1. DEFINE NEW ALIGNMENT

Open the drawing »Aquaterra Layout.dwg«.

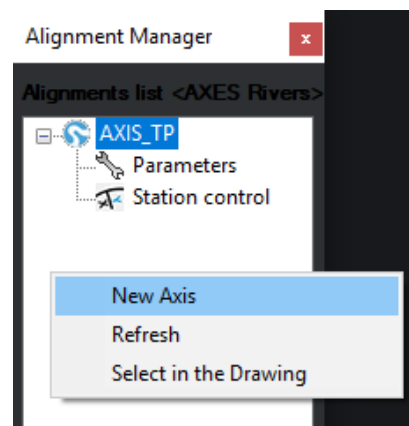
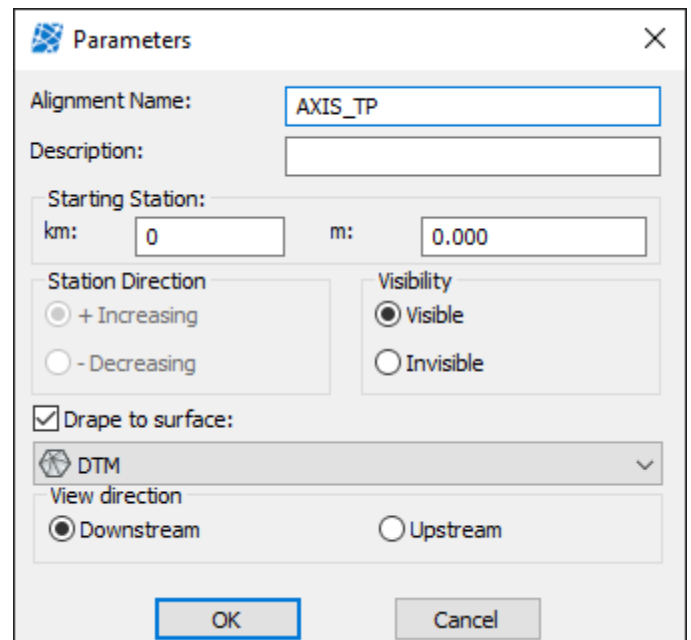
1.1 Alignment manager

1. From the Ribbon under Layout tab, click [Alignment Manager](#).



In Parameters dialog box specify:
Alignment name: AXIS_TP
Description (optionally),
Starting station: 0.00
Visibility: visible
Drape to surface: DTM
View direction: Downstream/Upstream
(Select whether the cross-sections are downstream or upstream from the viewpoint. If downstream is selected, then the left bank will be drawn on the left side of the axis; if upstream, it will be on the right side of the axis.)

2. Confirm with OK.
3. You can also define a new alignment directly in *Alignment manager* dialog box with right click anywhere in the *Alignment Manager* window.
4. Confirm with *OK*.



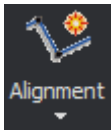
2. DESIGN ALIGNMENT

Aquaterra provides three methods to design road alignment: you can draw an alignment with tangent polygon, convert polyline to alignment or Best-Fit option.

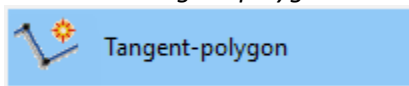
2.1 Draw an alignment with tangent polygon

Using the *Tangent polygon* method, you can interactively insert a tangent polygon that determines the river alignment.

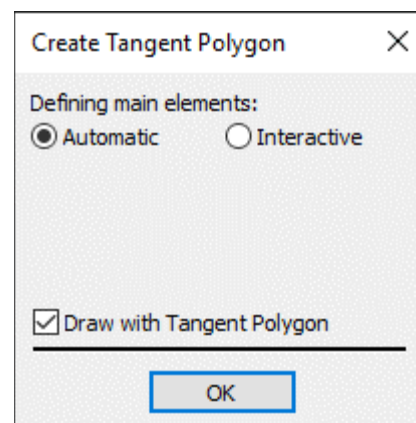
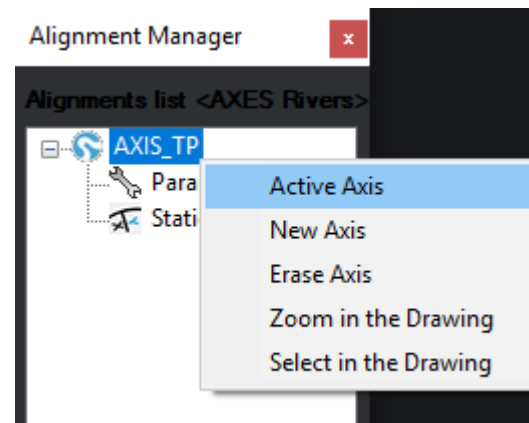
1. Your alignment »AXIS_TP« should be set as active (right click on the axis in the Alignment Manager and select »Active axis«).
2. From the Ribbon in the *Layout* tab, click on the arrow under the **Alignment** icon



and select *Tangent-polygon*.



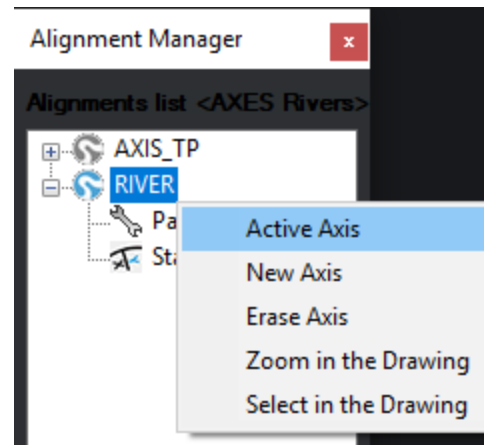
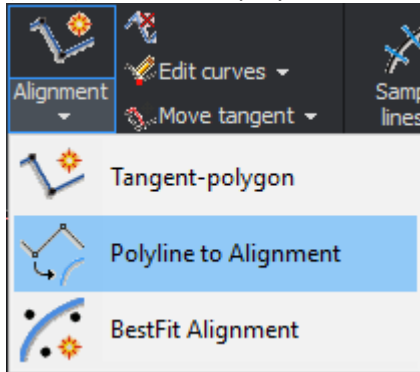
3. Parameters in the Create Tangent Polygon dialog box are set to Automatic. Confirm with OK.
4. Insert the tangent polygon by clicking in the drawing.
5. When the tangent polygon is inserted, confirm with Enter.



2.2 Convert polyline to alignment

Using the Convert polyline to alignment method you can convert any polyline to a tangent polygon.

1. Your alignment »RIVER« should be set as active (right click on the axis in the Alignment Manager and select »Active axis«).
2. Run the command Polyline to Alignment (23F2) and select a polyline to be converted.

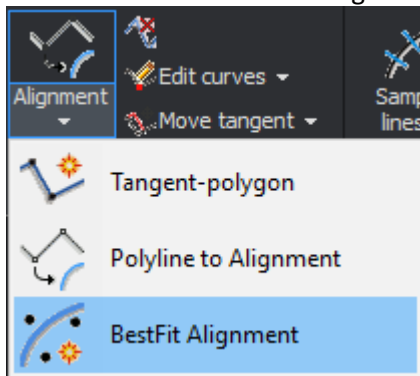


3. The polyline is now replaced with the longitudinal axis.

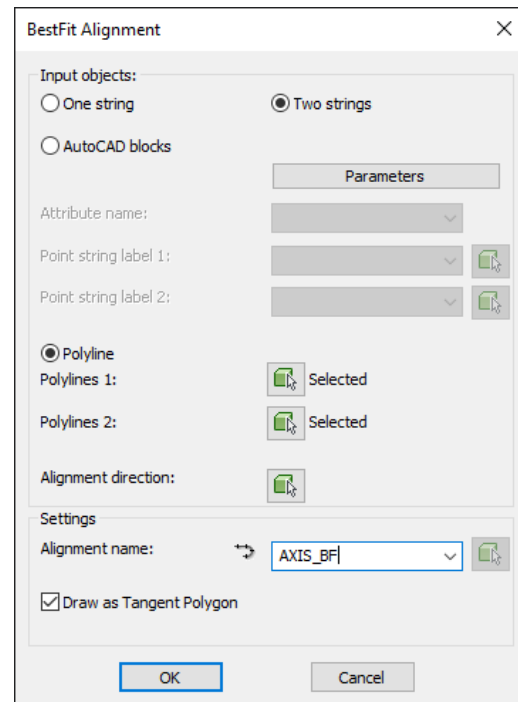
3.1 BestFit Alignment

The BestFit command calculates and draws an axis that best fits to the given sequence of points or the polylines.

1. Run the command BestFit Alignment (23D5).



2. In the dialog box define the Input objects settings and select the objects in the drawing.
3. Define the alignment name and confirm with OK.




4. DESIGN SAMPLE LINES

After the longitudinal alignment has been created, you can construct sample lines. Using commands from the Sample lines command group, you can define sample lines: equidistant (at regular intervals), at specific stations, through selected points on the longitudinal alignment or in the main points of the alignment.

3.1 Draw sample lines

1. Set the »RIVER« alignment as active alignment (double click on its name in Alignment manager).

2. From the Ribbon in the *Layout* tab, click on

Sample lines icon  and select *Draw sample lines*.

3. In dialog box you can define sample lines parameters: the area where sample lines are drawn, distance between sample lines, width left and right, prefix of the sample lines name and starting counter.

Check: Equidistant inside limits

Uncheck: Over the whole interval

Define starting station: 0.000

Define ending station: 405.000.

Uncheck: At the end point

Distance between sample lines: 20 m

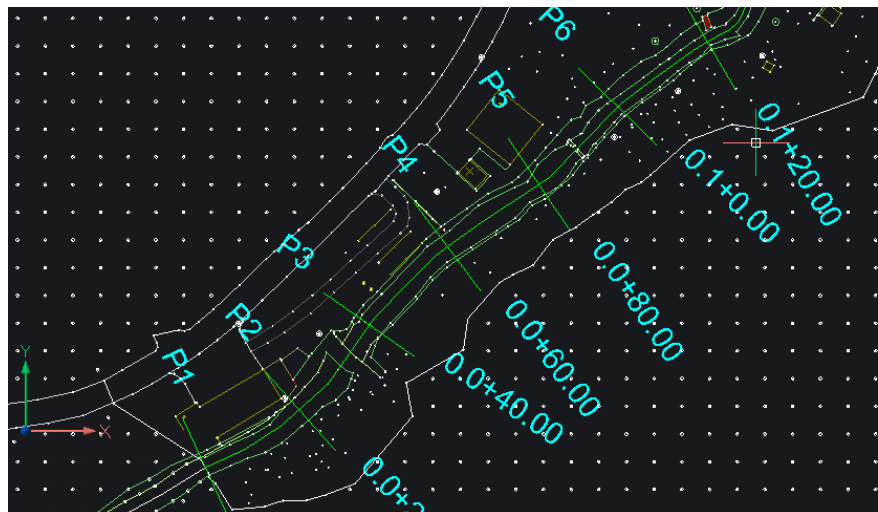
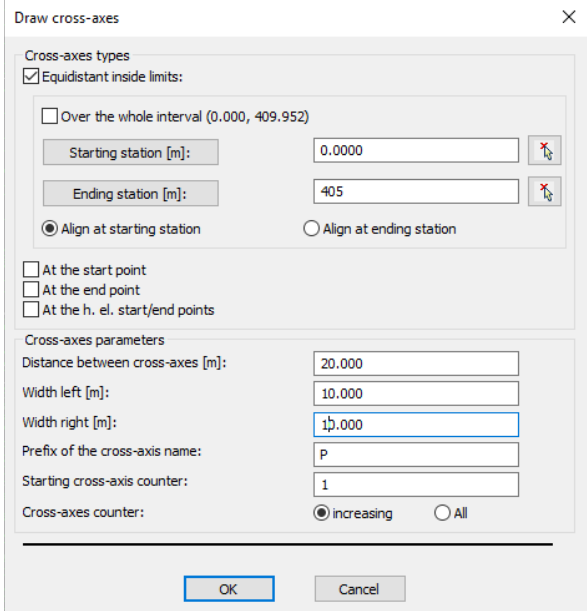
Width left: 10 m

Width right: 10 m

Prefix: P


Starting counter: 1

4. Confirm with *OK*.



5. DRAPE TO SURFACE

If you haven't selected the option »drape to surface« when defining alignment parameters (chapter 1.1), you have to drape longitudinal alignment and sample lines on surface additionally.

1. From the Ribbon in the *Layout* tab, click on the **Drape** icon. 
2. Select a surface from a list and confirm with OK.

