Plateia by CGS-labs

Getting Started Tutorial

Tutorial/Workflow procedure

CGS SOFTWARE

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Plateia Getting Started Tutorial

Title: **Plateia Getting Started Tutorial**

Document date: 15. 06. 2020

Version: 3.0.

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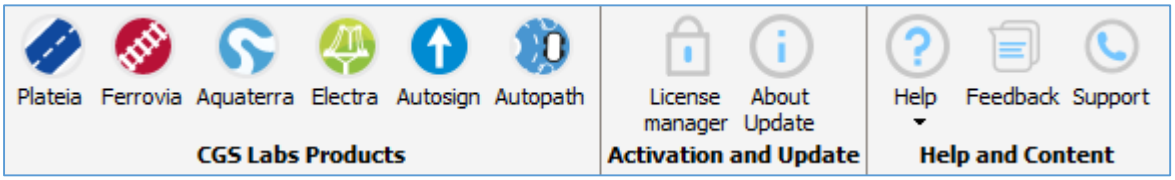
INTRODUCTION

This tutorial will get you started with the application workspace and some important basic functions in order to get familiar with the software environment. In the following procedure is represent how to design roads using Plateia software.

CGS Labs ribbon is a common place for all products included in CGS Labs Civil Solutions design suite. From CGS Labs ribbon you can load Plateia, Ferrovia, Aquaterra, Electra, Autosign and Autopath ribbon.



Plateia … road design

Ferrovia … railway design

Aquaterra … channel and river design

Electra … electrical design

Autosign … traffic sign design

Autopath … swept path analysis

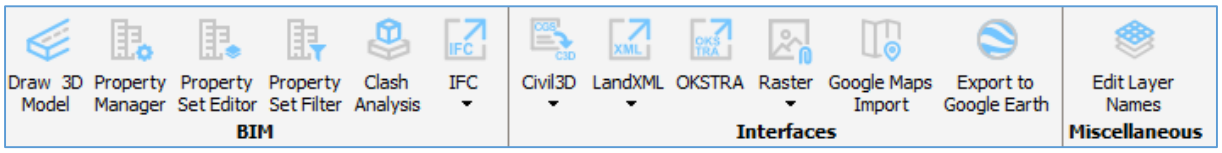
When using AutoCAD ribbons, Plateia offers six ribbon tabs:

Layout	… survey tools and alignment design
Profile	… profile design
Cross sections	… cross sections design
Autosign	… traffic design
Autopath	… planning the turning curves
Utility	… tools for data conversion/export

To open Plateia ribbon panels click on CGS Labs ribbon and select the icon Plateia. For detailed content of each ribbon see command reference in Help file provided within software.

LAYOUT

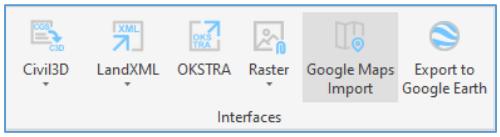
Start with Utility Ribbon Panel.

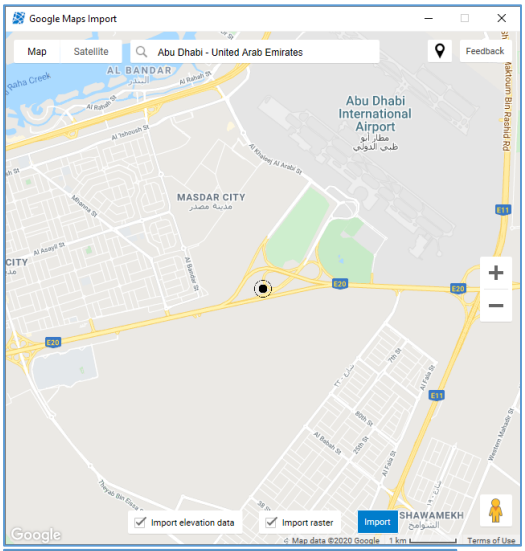


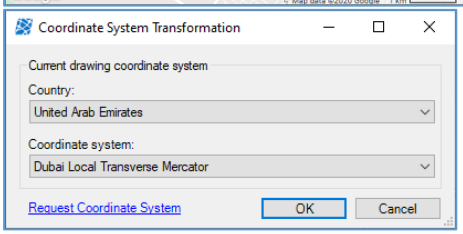
1. Google Maps Import

1.1 Open New drawing.

1. Click on Google Maps Import icon.
2. In the upper part of dialog box (in search tab) insert location name and click *Enter.*
3. With + / − button you can zoom in or out and find appropriate location.
4. Check *Import elevation data* and click *Import*.
5. *Coordinate System Transformation* dialog box appears. Specify the *Country* and *Coordinate system*.
6. Confirm with *OK*.

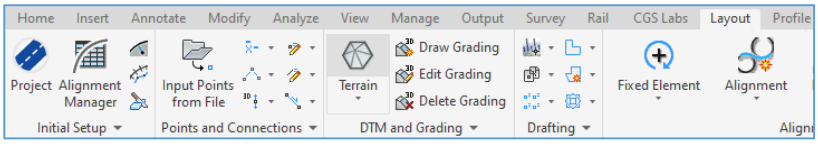


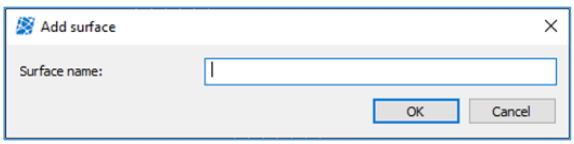




2. Surface

1. Switch to Layout Ribbon Panel.
2. Click on Terrain icon.
3. Define *Surface name*.

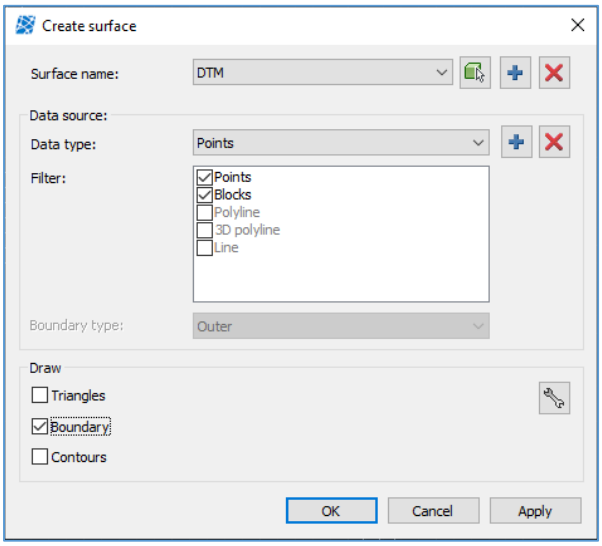




4. In the drop-down menu *Data type* select appropriate data type (points) and with the button  add the components in the drawing.

5. In the bottom part of the dialog box you can select, whether to draw a triangular irregular network (triangles), boundary or contours.

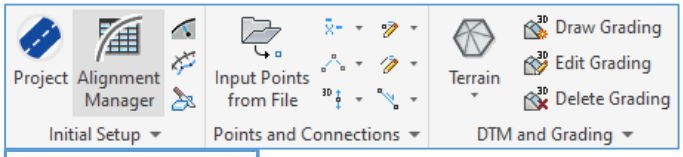
6. Confirm with *OK*.

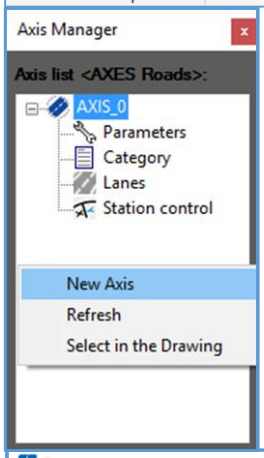


3. Alignment Manager

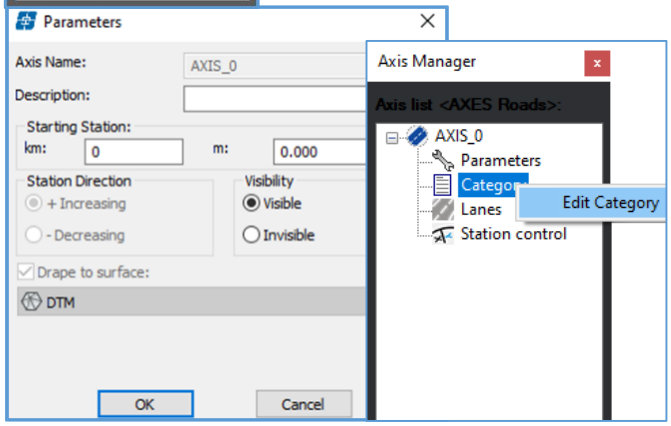
Click on Alignment Manager icon to define a new alignment name.
A dialog box with a list of alignments and its parameters opens up. To create a new alignment, right click in *Alignment manager* dialog and select *New Axis*.

Prior to designing of a new alignment, you need to define it by stating the initial properties (name, description, starting station, lanes type…) and define it as a current alignment.

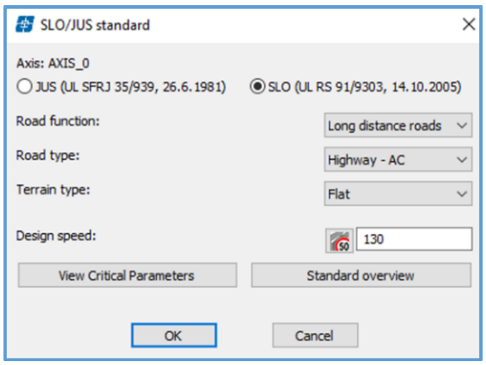




1. In the *Parameters* sub setting define new alignment name and starting station. If you have more than one alignment, you can make a selected one invisible. This means that all layers related to a selected alignment can be automatically switched off.

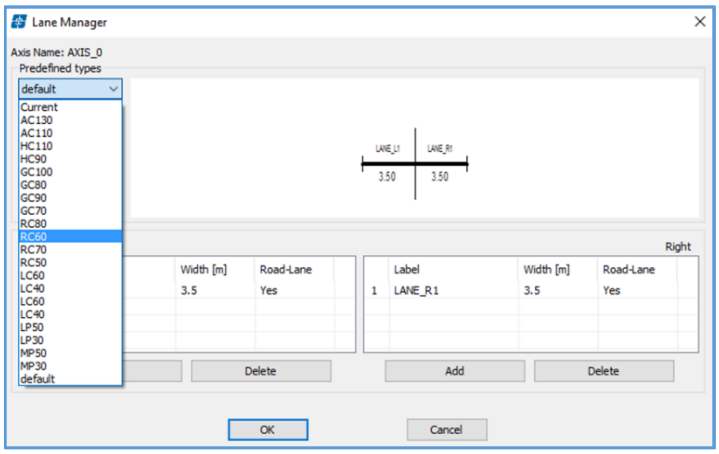


2. When parameters for new alignment are defined, set the design speed for alignment in *Category* sub setting and define design speed influences on alignment design parameters.



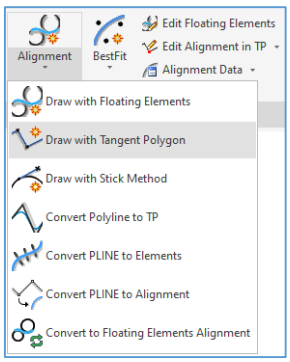
3. If you press the button  , you can define different speeds for different areas along the alignment.

4. In *Lanes* sub setting define the characteristic lanes section. You can define lanes separately for left and right side according to alignment. There are some predefined lane types available in the *Predefined types* window.

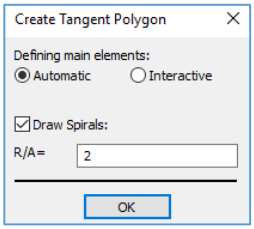


4. Create Alignment

1. Click on Draw Tangent Polygon icon.

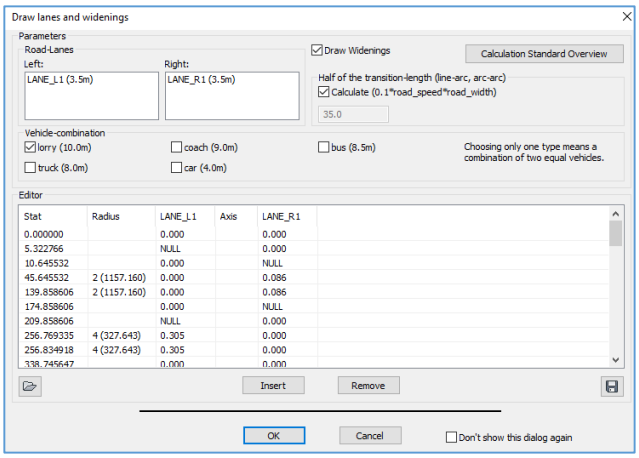


2. *Create Tangent Polygon* dialog box appears. Click *OK*.



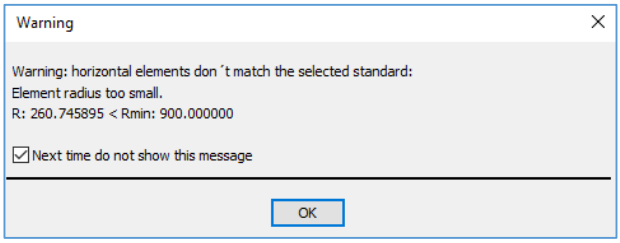
3. Click in drawing to select the first point of tangent polygon. Continue with selection of more points to create a tangent polygon. Press *Enter*.

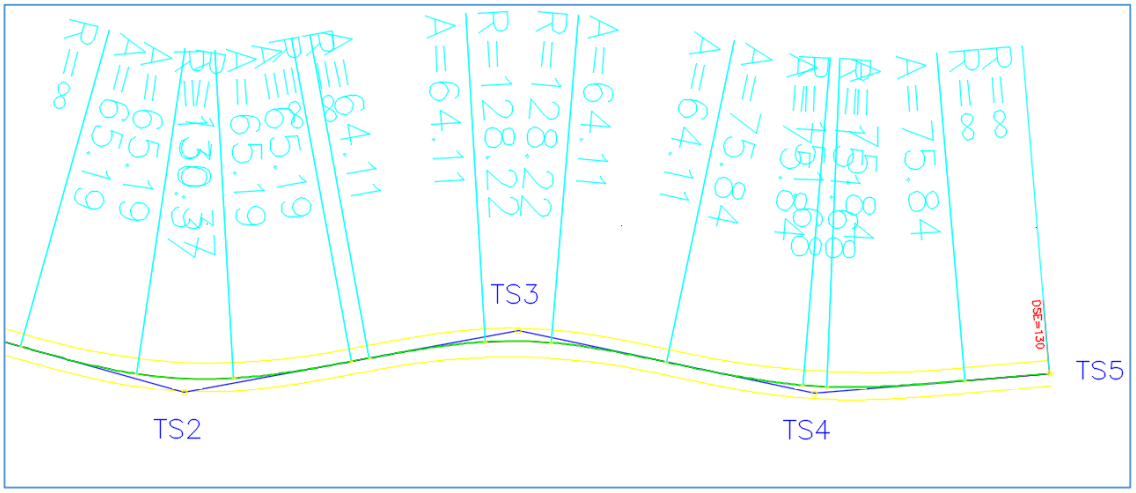
4. In *Draw lanes and widenings* dialog box choose vehicle combination to calculate widenings. Alignment parameters such as spiral lengths and radius values are calculated based on design speed defined in alignment name *Category definition.*



5. Confirm with *OK.*

6. In case horizontal elements do not match the selected standard, a warning message appears.





5. Create Sample Lines

Continue with defining sample lines on the alignment. Plateia offers a variety of tools for designing sample lines. In this tutorial we will use Draw Sample Lines command.

1. Click on Sample lines icon.

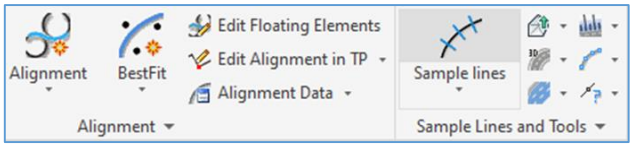
2. Sample lines are created equidistantly along the whole alignment (check *Over the whole interval*).

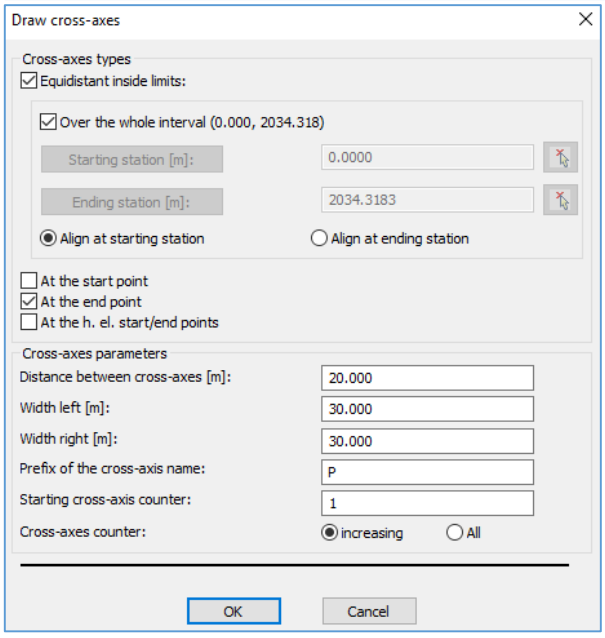
3. Specify whether sample line is created at the start/end station and in horizontal elements' start/end points.

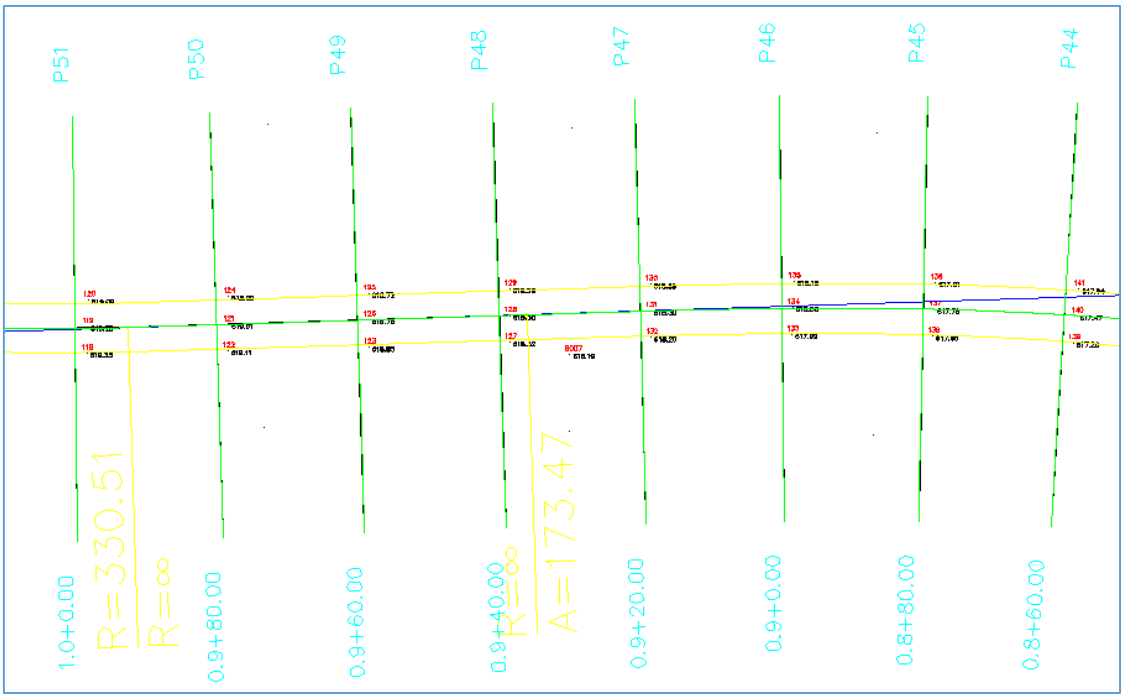
4. Define *distance between sample lines* and *width left/right*.

5. Define *prefix of sample line name* and *starting counter*.

6. Confirm with *OK*.

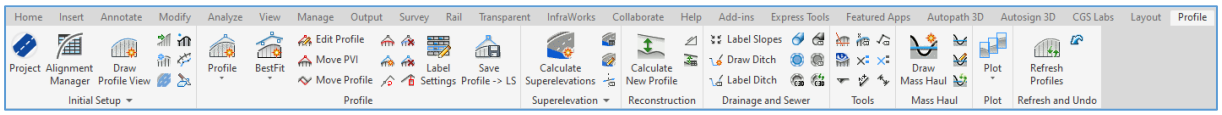






PROFILE

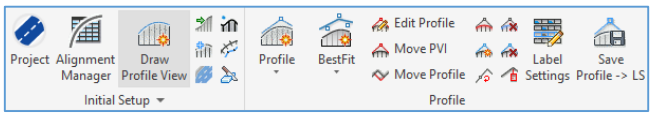
Click on Profile panel in the Plateia ribbon to continue with the profile design:



6. Draw Profile View

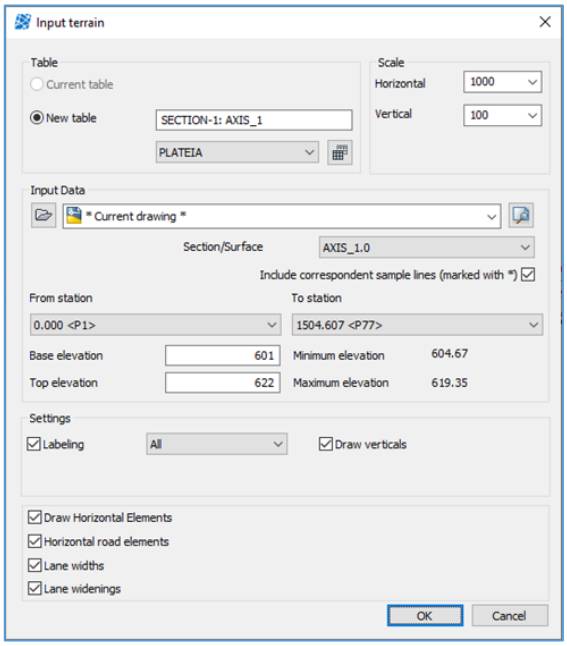
Insert terrain in profile view with the Draw Profile View command.

1. Click on Draw Profile View command.



2. Select *Plateia table* type, for source data use **Current drawing**, or select another drawing to which your alignment design was saved (if you started to draw profile in a new drawing).

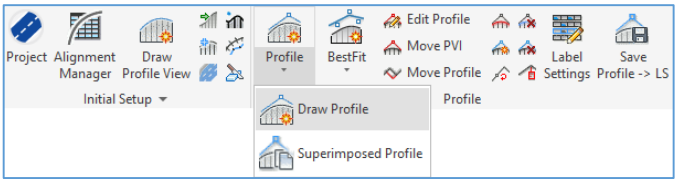
3. Press *OK* and define the location of profile view in the drawing.



7. Draw Profile

Design a vertical alignment with Draw Profile command.

1. Click on Draw Profile command.

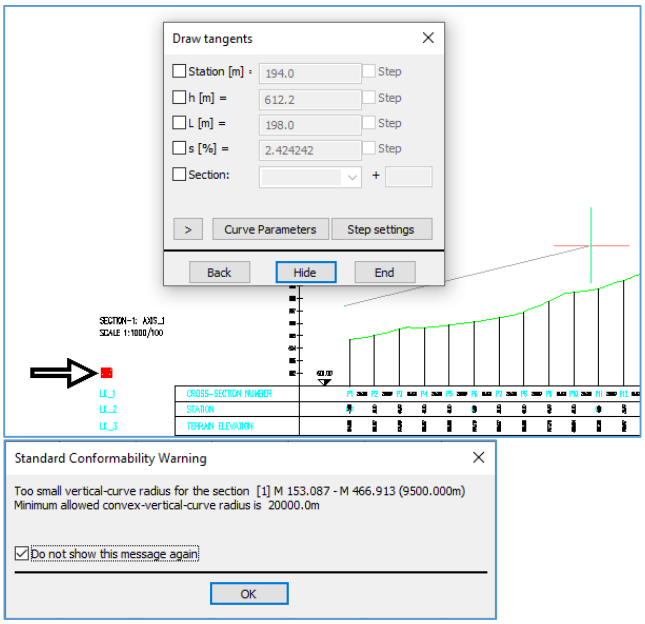


2. Vertical alignment can be drawn by selecting vertex points in the drawing.

3. Dialog box with tangent parameters appears.

4. Press Enter to finish.

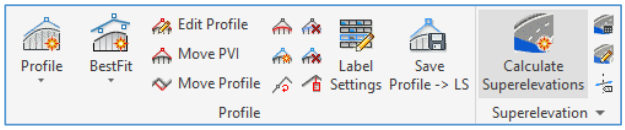
5. A warning message about minimum allowed vertical-curve radius can appear.



8. Define Superelevations

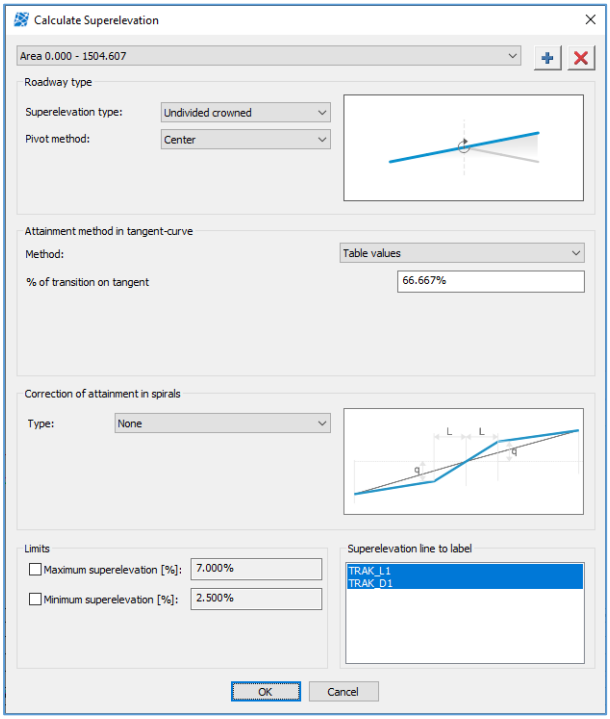
Define superelevations with Calculate Superelevations icon.

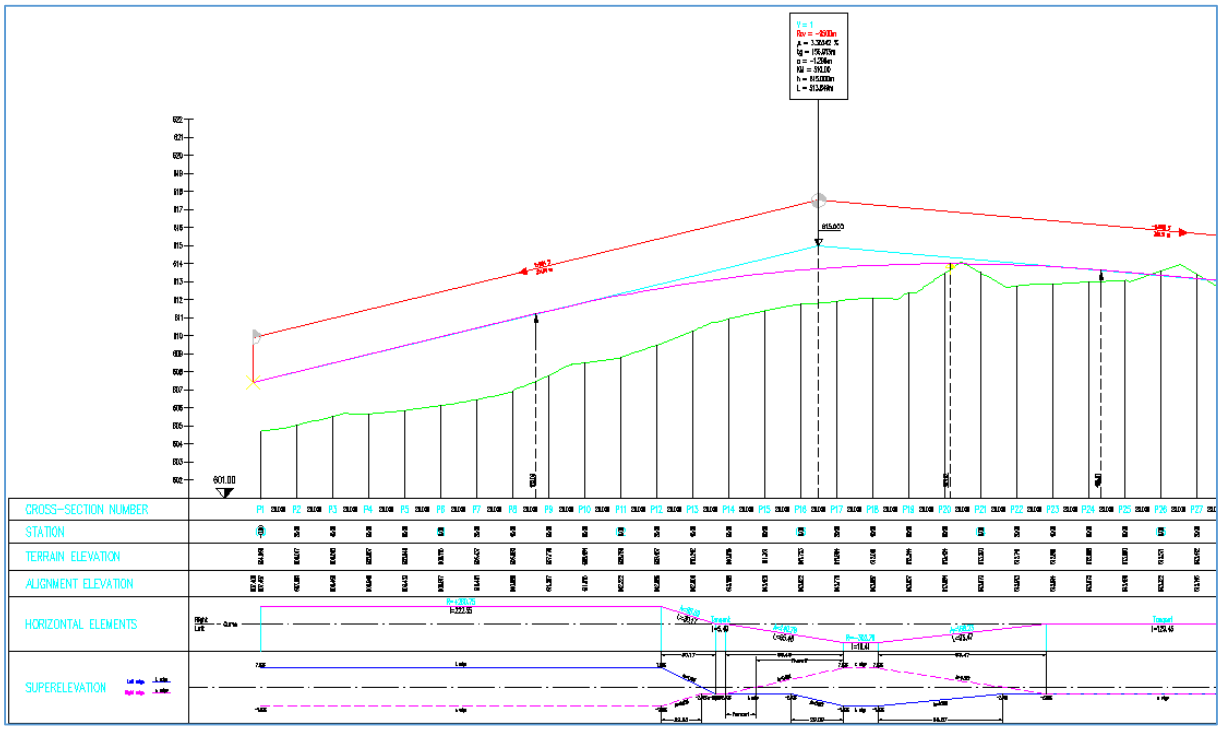
1. Click on Calculate Superelevations icon.



2. With the button  in the dialog box define the area on the alignment where you assign the roadway type. Then select the superelevation type and pivot method.

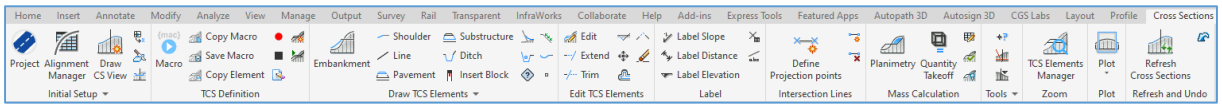
3. In the bottom part of the dialog box specify minimum and maximum superelevation in % .





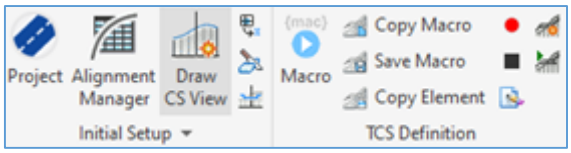
CROSS SECTIONS

Click on Cross Section panel in the Plateia ribbon.



9. Draw CS View

1. Insert cross section table views with Draw CS View command.



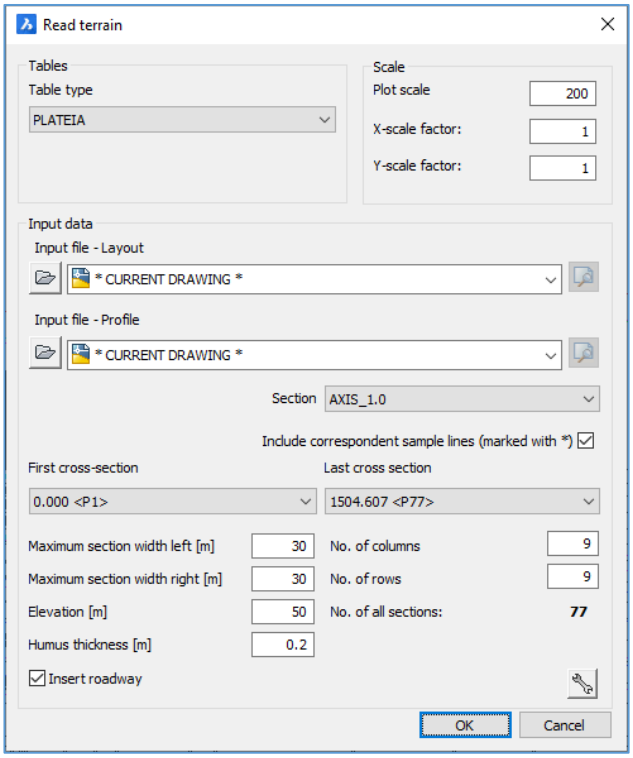
2. Choose *Plateia* table type, for source data use **Current drawing**, or select another drawing if you started to draw cross section views in a new drawing.

3. Define horizontal and vertical scale of tables inserted.

4. Select the *first* and the *last cross-section* in selected sections/segments.

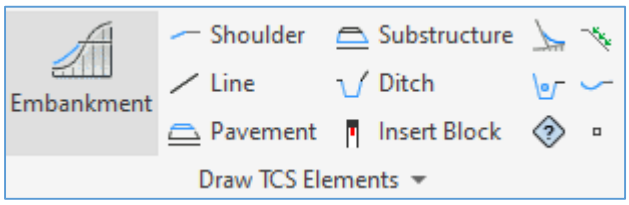
5. Check *Insert roadway* to insert the roadway in the cross section automatically.

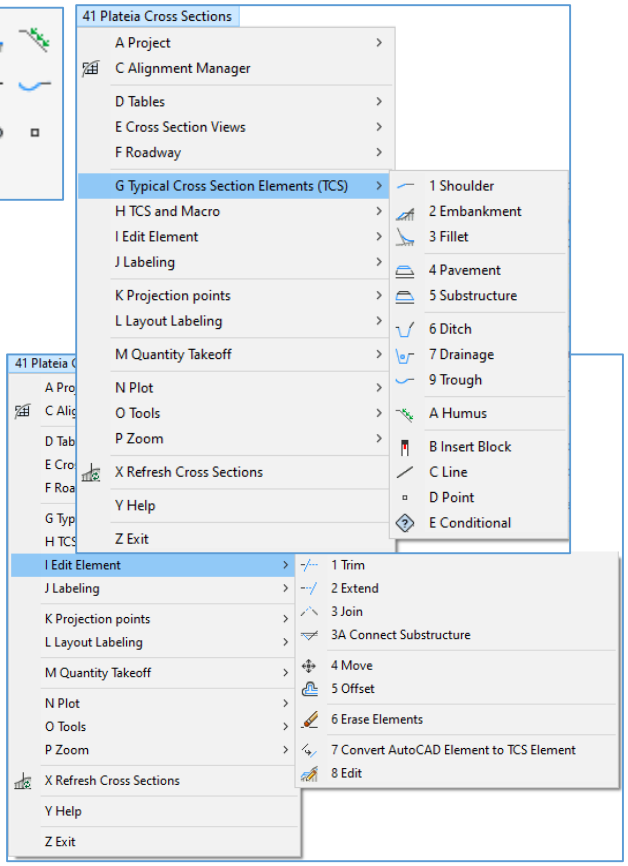
6. Confirm with *OK* and define the location of Cross sections view in the drawing.



10. Draw TCS Elements

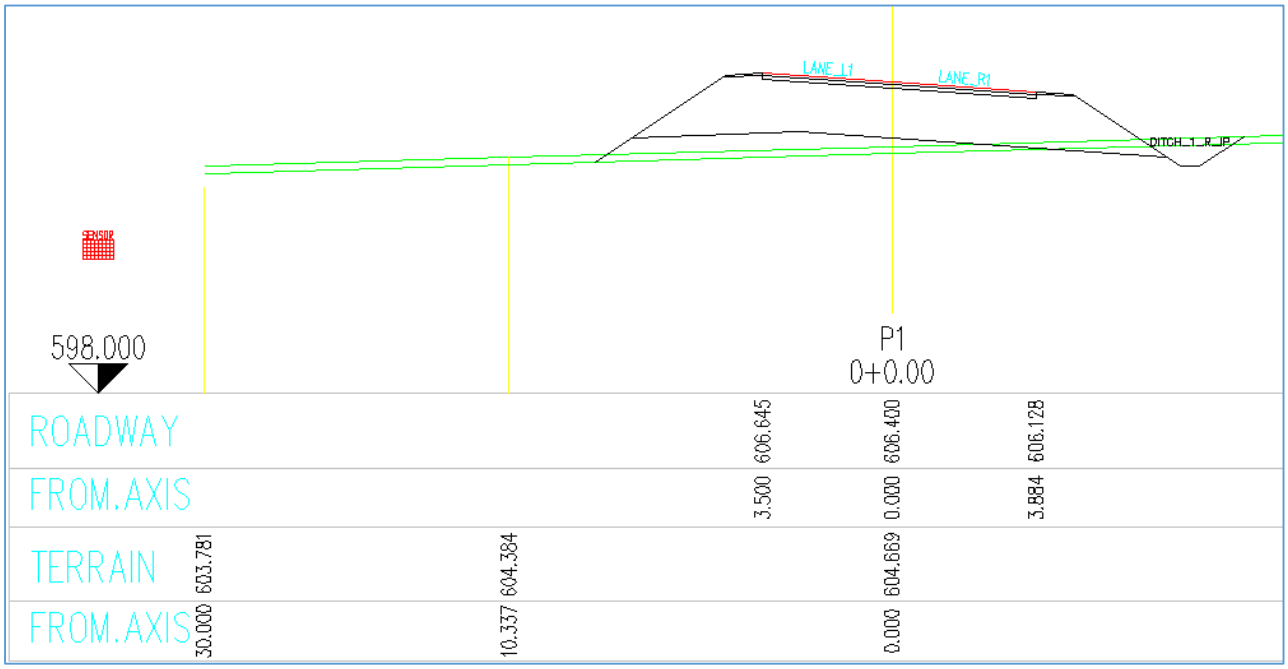
Construct roadway section geometry with Draw TCS Elements commands.





1. In *Plateia Cross Sections menu* there is a bunch of commands for designing roadway cross section geometry.

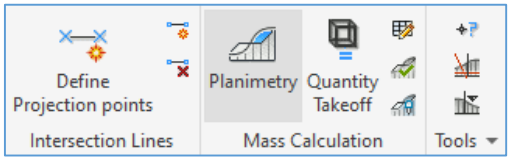
2. With *Edit element* commands roadway section geometry is edited: trimmed, extended, moved, erased, etc.



11. Planimetry (QTO)

Define material area with Planimetry command.

1. Click on Planimetry icon.



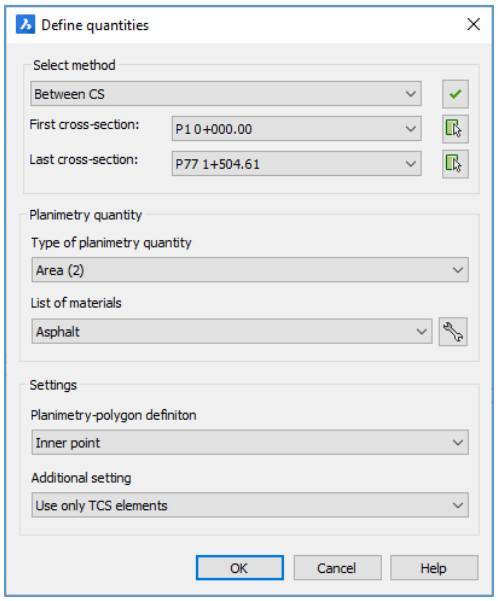
2. Select method *Between CS,* define *first* and *last cross section*, between which you want to define quantities.

3. Specify type of planimetry quantity. Automatic planimetry is divided into two types: surface and length planimetry.

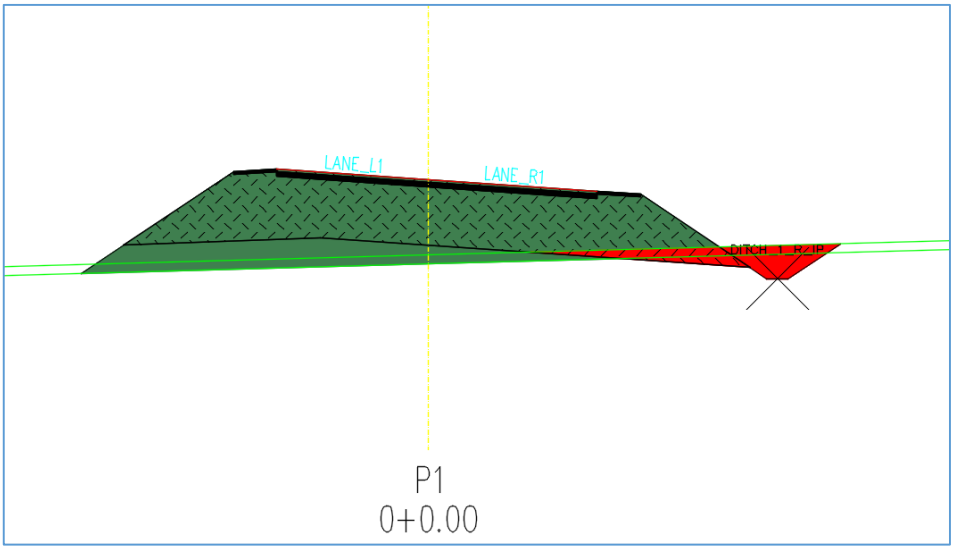
4. Specify material.

5. In *Settings*, specify *Planimetry-polygon definition.*

   a) *Inner point*: planimetry polygon is defined by selecting a point inside an area, surrounded by the planimetry polygon.
   b) *Between two polylines*: planimetry polygon is defined by two polygon lines, bordering a surface. First defined so-called *reference polygon line* and then a *second polygon line*.

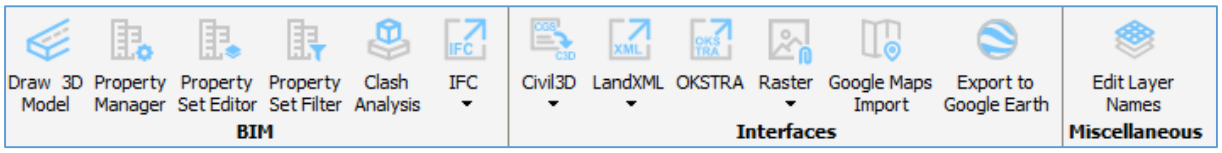


6. Confirm with *OK* to draw completed polygons with hatches in their inner part.



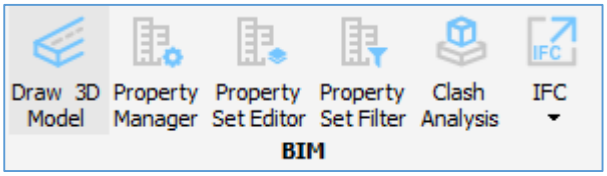
UTILITY

Click on Utility panel in the Plateia ribbon.



12. Create 3D Solid Model

1. Create 3D model with Draw 3D Model command.

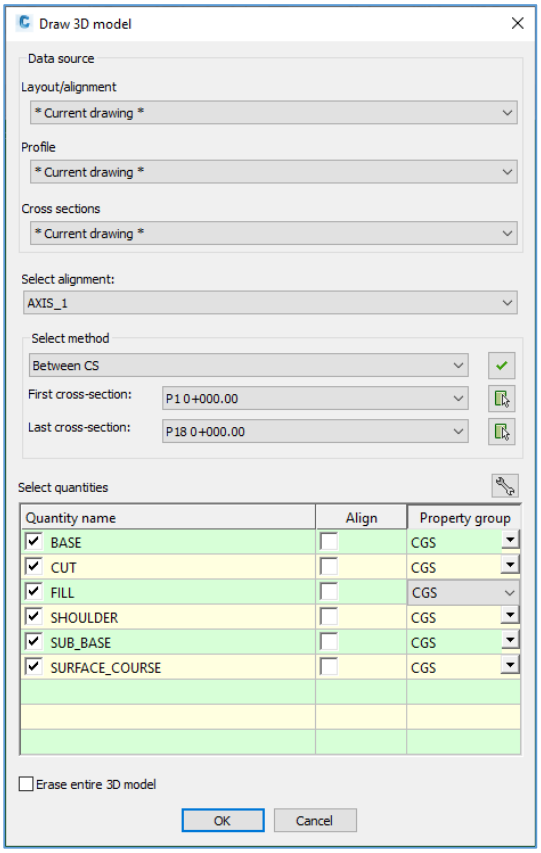


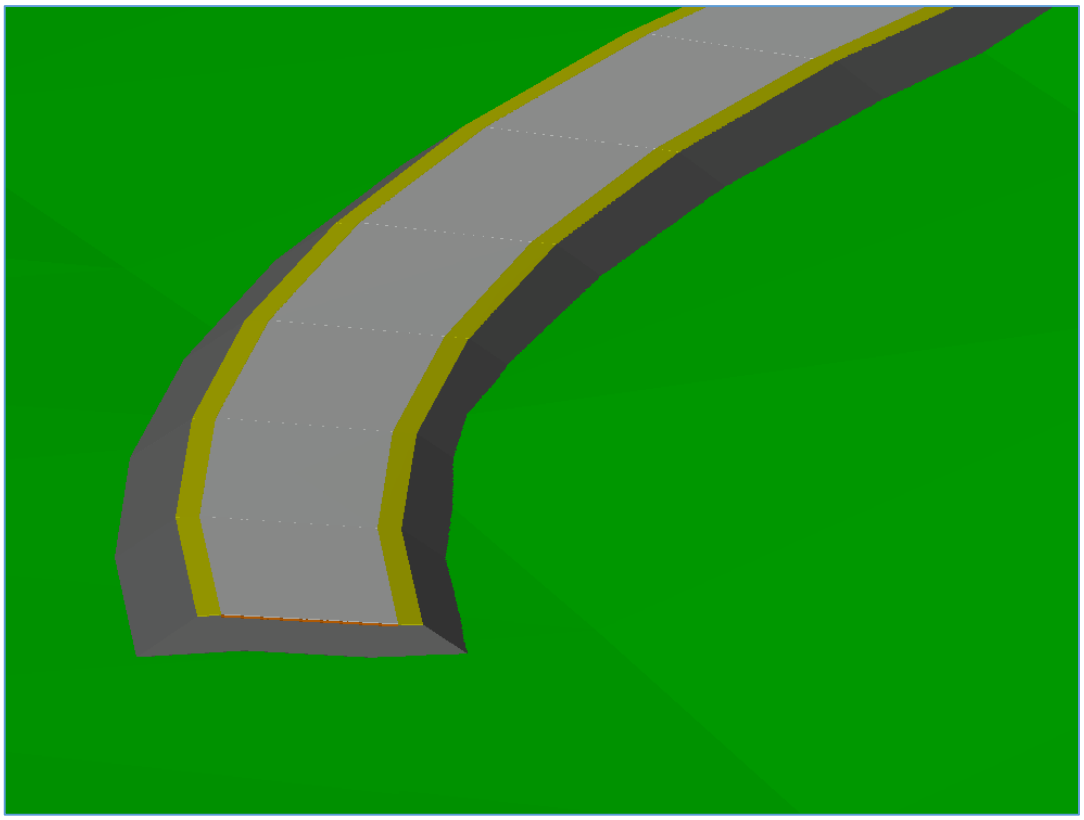
2. From the drop-down menu an alignment is selected and the starting and end profile for the creation of 3D solid models are defined.

3. In *Layout/alignment* enter the alignment drawing, in *Profile* enter the drawing of the profile and in *Cross sections* enter the drawing of the cross-sections of the road. Data sources can be either in one group or in separate DWG-drawings.

4. In the *Select alignment* select the main alignment and define the starting and ending cross section.

5. Check planimetry quantities you want to create a 3D solid model from.





13. Property set Filter

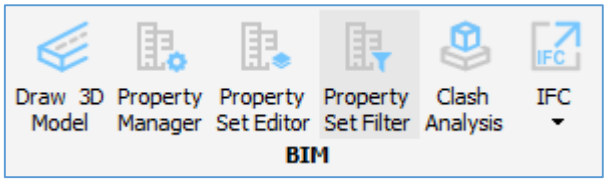
Select, isolate or hide selected material definition within the 3D solid (BIM) models with Property Set Filter command.

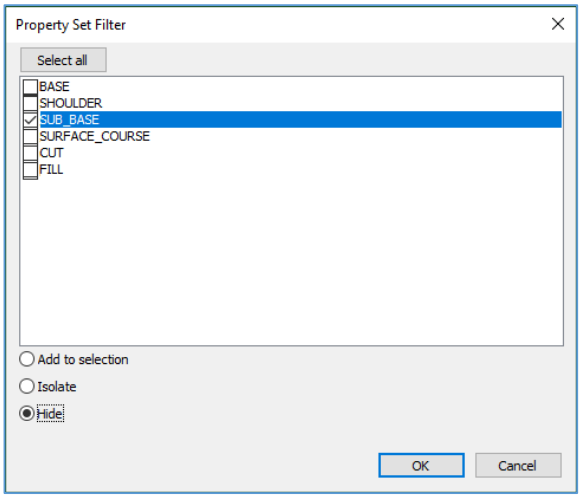
1. Click on Property Set Filter icon.

2. Select which material definition you want to temporary hide in the drawing.

3. Check *Hide* option in the bottom of dialog box.

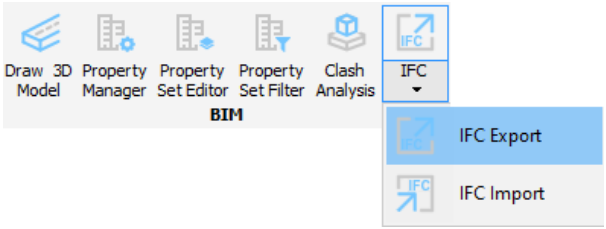
4. Confirm with *OK*.





14. IFC Export

Export 3D solid objects with Property set definitions to external IFC exchange file with IFC Export command.

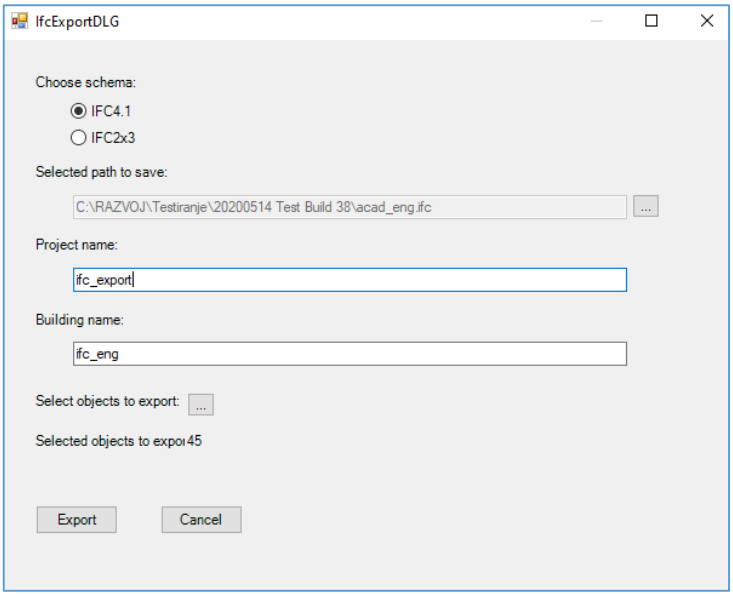


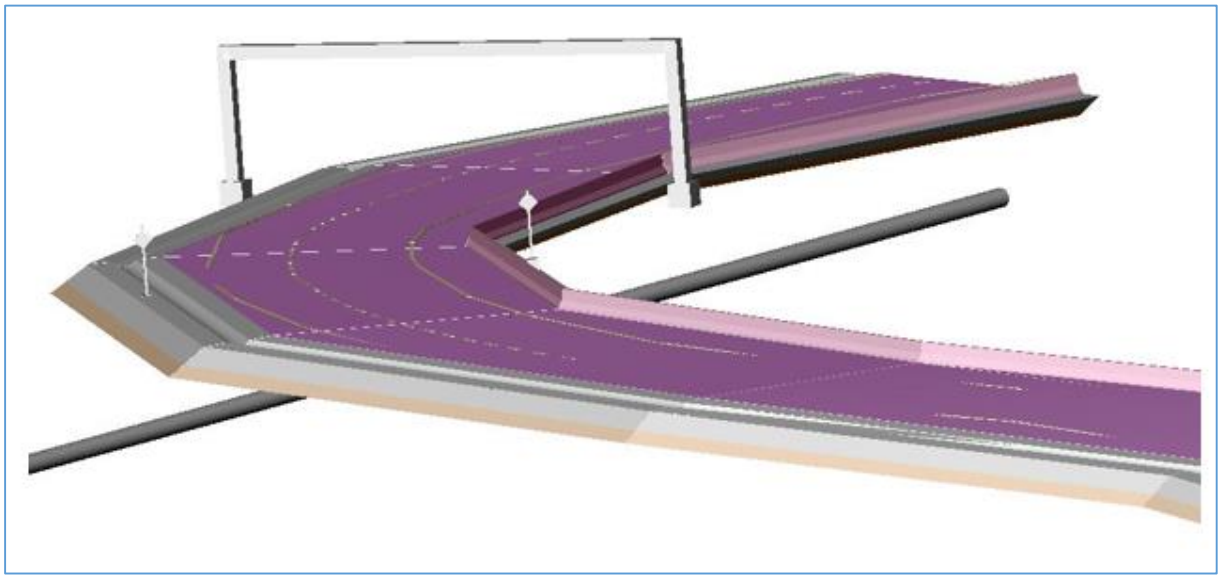
1. Click on IFC Export icon.

2. *IFC exportDLG* dialog box opens. Choose IFC schema, define location where file is saved, define project and building name.

3. With the button  select objects to export.

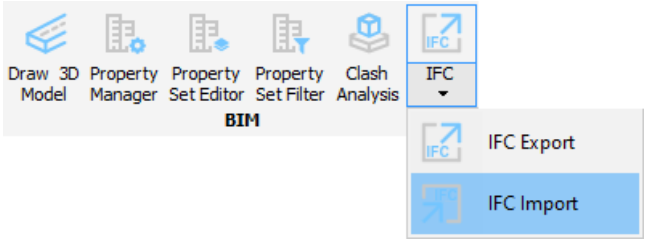
4. Confirm with *Export*.



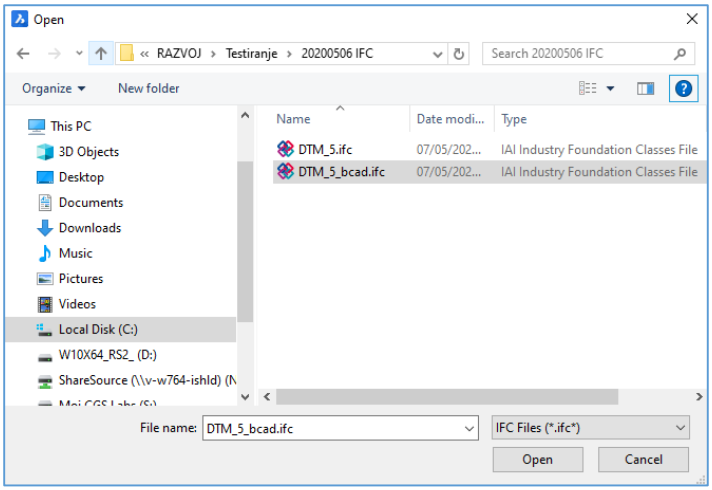


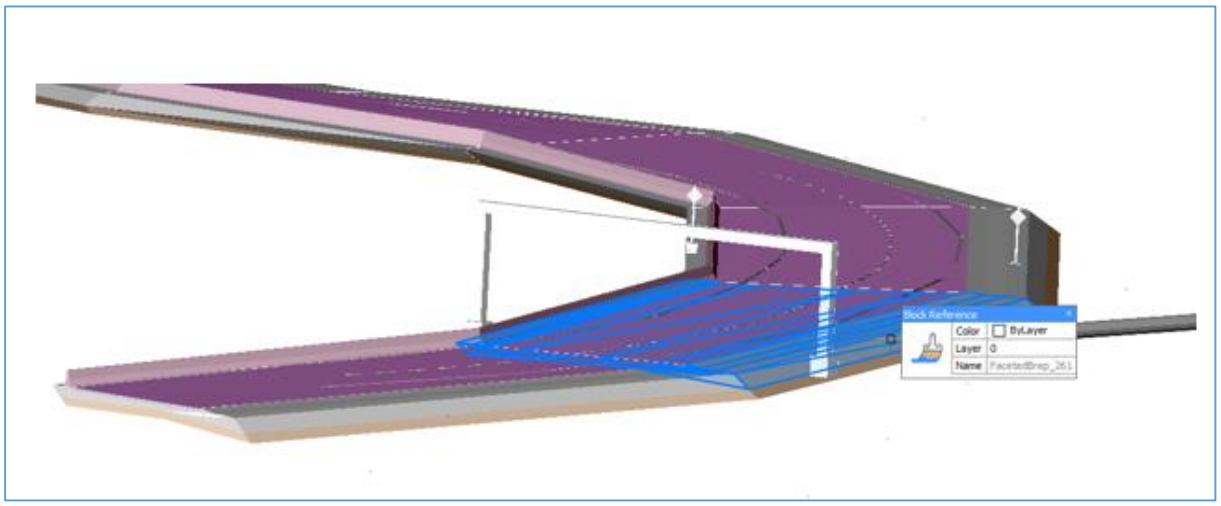
15. IFC Import

IFC import functionality enables inserting different 3D objects into a CAD drawing. Besides 3D solid model of the road, it is now possible to insert buildings, bridges, walls and other objects making the road, railway or river canal design more comprehensive and detailed.



1. Click on IFC Import icon.
2. Select the IFC file from the folder.
3. Confirm with *Open*.
4. The result is a block reference inserted into a drawing, which can be exploded to the 3D solid model(s).





WORKFLOW SUMMARY

Below is a brief workflow summary of how to create a complete alignment/profile/cross sections/3D solid model project by using Plateia road design software. These commands define the Plateia basic procedure.

LAYOUT

1. Google Maps Import
2. Surface
3. Alignment Manager
4. Create Alignment
5. Create Sample Lines

PROFILE

6. Draw Profile View
7. Create Tangent
8. Calculate Superelevations

CROSS SECTIONS

9. Draw CS View
10. Draw TCS Elements
11. Planimetry

UTILITY

12. Create 3D Solid Model
13. Property Set Filter
14. IFC Export
15. IFC Import