

Plateia_{by} CGS-labs

Intersections

Tutorial/Workflow procedure





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Intersections Tutorial

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Title: **Intersections Tutorial**

Document date: 15. 06. 2020

Version: 3.0.

Printing: CGS Labs d.o.o.

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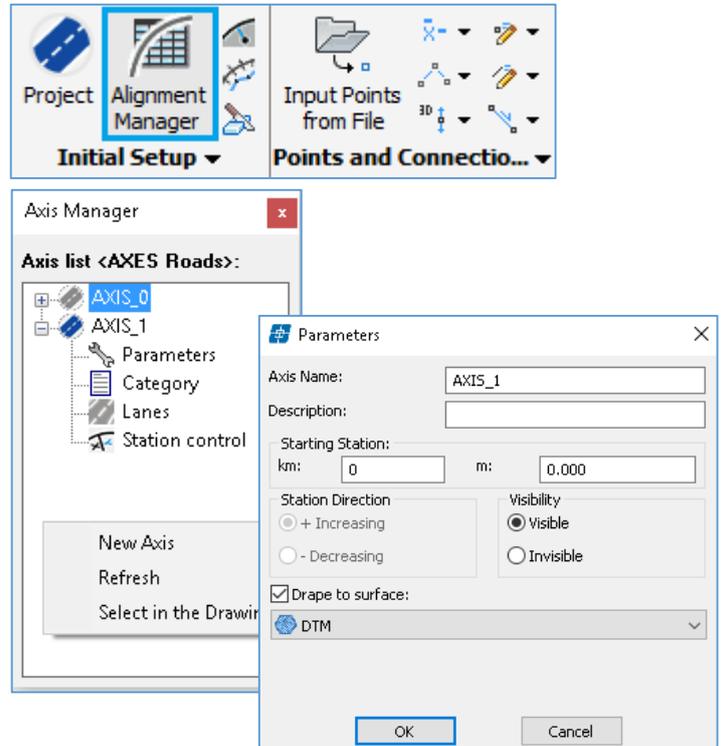
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INTRODUCTION

This tutorial will show you the procedure how to create an intersection with Plateia software.

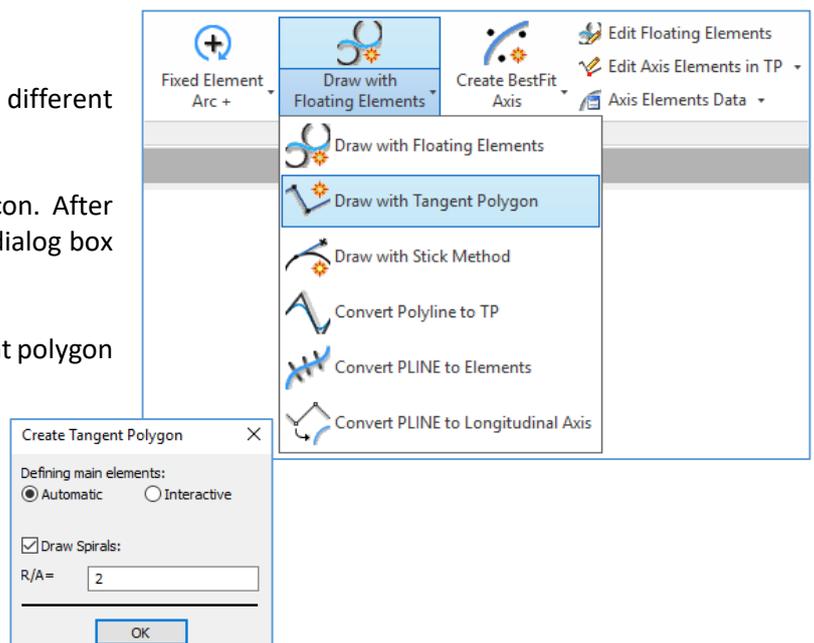
1. Alignment Manager

1. Start with **Layout Ribbon Panel**.
2. Click on **Alignment Manager** icon to define new alignment name.
3. A dialog box with a list of alignment and its parameters opens up. To create a new alignment, right click in Alignment manager dialog box and select **New Axis**.
4. Prior to designing a new axis, you need to define it, by stating the initial properties (description, station, direction ...) and define it as a current alignment. You can define the active axis in the status bar or by selecting it in the Alignment Manager.



2. Create Alignments

1. Define active alignment.
2. Design an alignment with one of different methods.
3. Click on **Draw Tangent Polygon** icon. After invoking the command, the following dialog box appears.
4. Confirm with OK and define a tangent polygon with selecting points in the drawing.



5. In the following dialog box select a vehicle combination to calculate widenings. Alignment parameters such as spiral lengths and radius values are calculated based on design speed defined in *Category definition*.

Draw lanes and widenings

Parameters

Draw Widenings Calculation Standard Overview

Half of the transition-length (line-arc, arc-arc) Calculate (0.1*road_speed*road_width) 35.0

Vehicle-combination

lorry (10.0m) coach (9.0m) bus (8.5m)

truck (8.0m) car (4.0m) Choosing only one type means a combination of two equal vehicles.

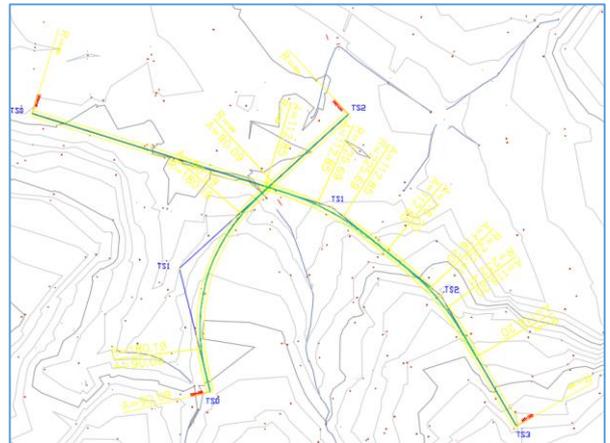
Editor

| Stat | Radius | LANE_L1 | Axis | LANE_R1 |
|------------|--------------|---------|------|---------|
| 0.000000 | | 0.000 | | 0.000 |
| 5.322766 | | NULL | | 0.000 |
| 10.645532 | | 0.000 | | NULL |
| 45.645532 | 2 (1157.160) | 0.000 | | 0.086 |
| 139.858606 | 2 (1157.160) | 0.000 | | 0.086 |
| 174.858606 | | 0.000 | | NULL |
| 209.858606 | | NULL | | 0.000 |
| 256.769335 | 4 (327.643) | 0.305 | | 0.000 |
| 256.834918 | 4 (327.643) | 0.305 | | 0.000 |
| 338.745647 | | 0.000 | | 0.000 |

Insert Remove

OK Cancel Don't show this dialog again

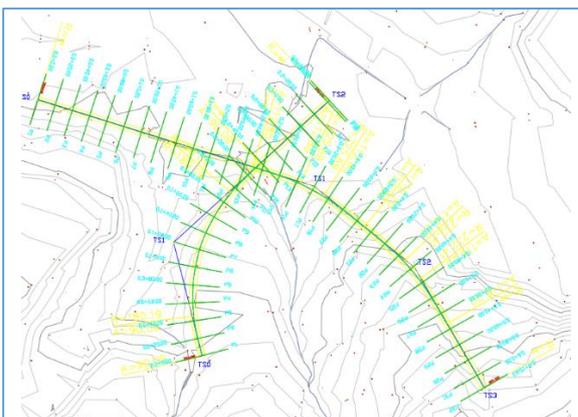
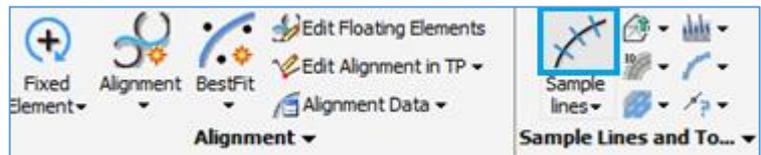
6. Repeat the procedure to create the second alignment, which intersects with the first road alignment.



3. Create Sample Lines

1. Click on **Draw Sample Lines** icon.

2. In the following dialog box define the distance between sample lines, width left and right, the prefix and starting number for sample lines name.



Draw cross-axes

Cross-axes types

Equidistant inside limits:

Over the whole interval (0.000, 2034.318)

Starting station [m]: 0.0000

Ending station [m]: 2034.3183

Align at starting station Align at ending station

At the start point

At the end point

At the h. el. start/end points

Cross-axes parameters

Distance between cross-axes [m]: 20.000

Width left [m]: 30.000

Width right [m]: 30.000

Prefix of the cross-axis name: P

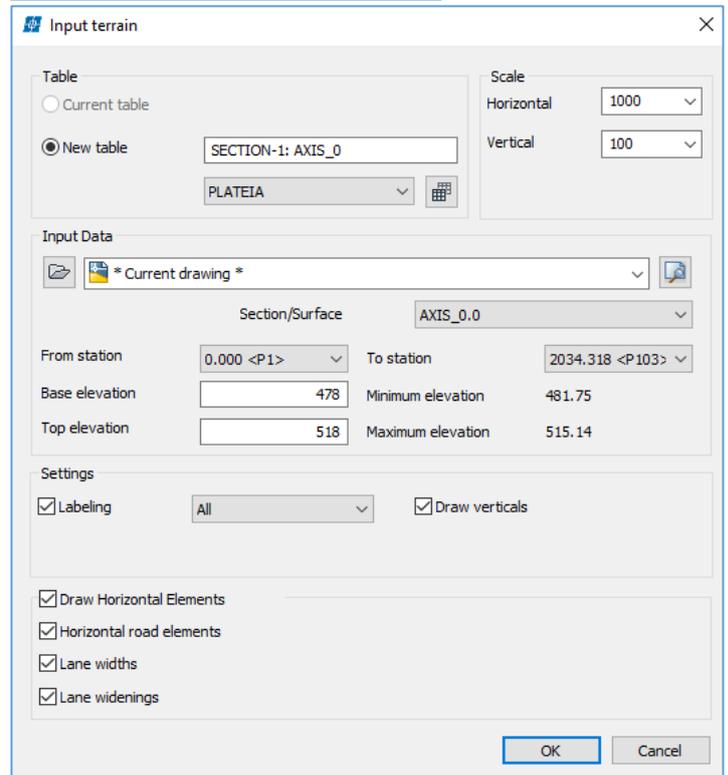
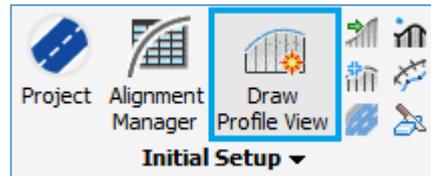
Starting cross-axis counter: 1

Cross-axes counter: increasing All

OK Cancel

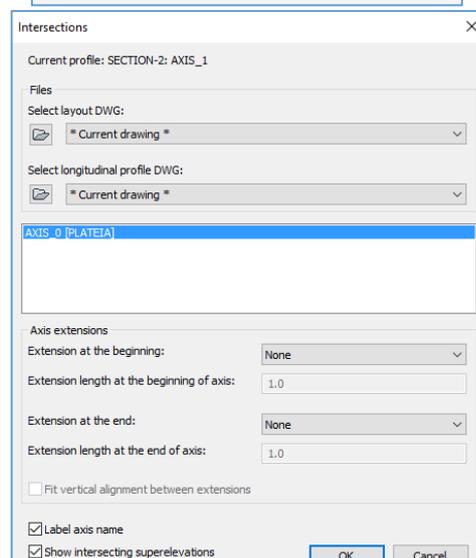
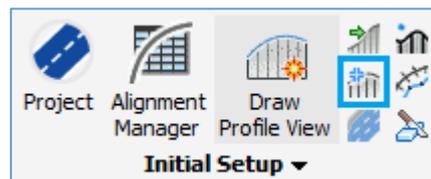
4. Draw Profile View

1. Continue with **Profile** Ribbon Panel.
2. Click on **Draw Profile View** icon.
3. Select Plateia table type, for source data use **Current drawing**, or select another drawing to which your alignment design was saved (in case you started to draw profile in a new drawing).
4. Press OK and define the location of profile view in the drawing.
5. Draw a profile view for both alignments in the drawing.



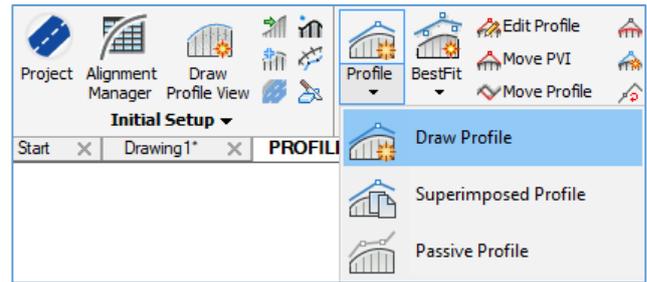
5. Intersections

1. Click on **Intersections** icon.
2. In the dialog box select the drawings of the layout (alignments) and the profile of the existing infrastructure.
3. After the selection of the input files, all the alignment, which cross the active alignment, are shown in the lower list. Select the alignment from the list and press OK.



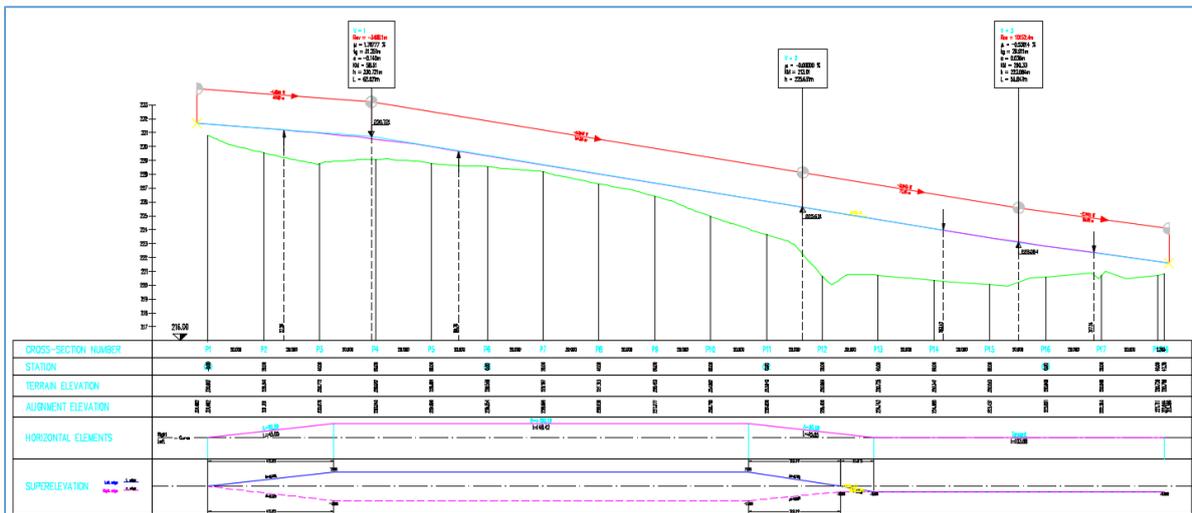
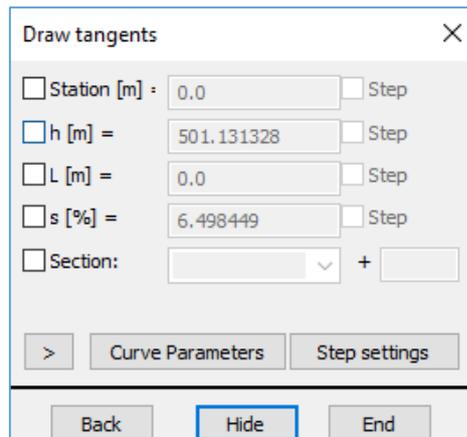
6. Draw Profile

1. Design the tangents in both profiles with **Draw Profile** command.



2. Tangents can be inserted to profile by selecting of vertex points with a mouse. Alternatively, they can be inserted by selecting parameters in a dialog box that appear after definition of the first tangent point in drawing.

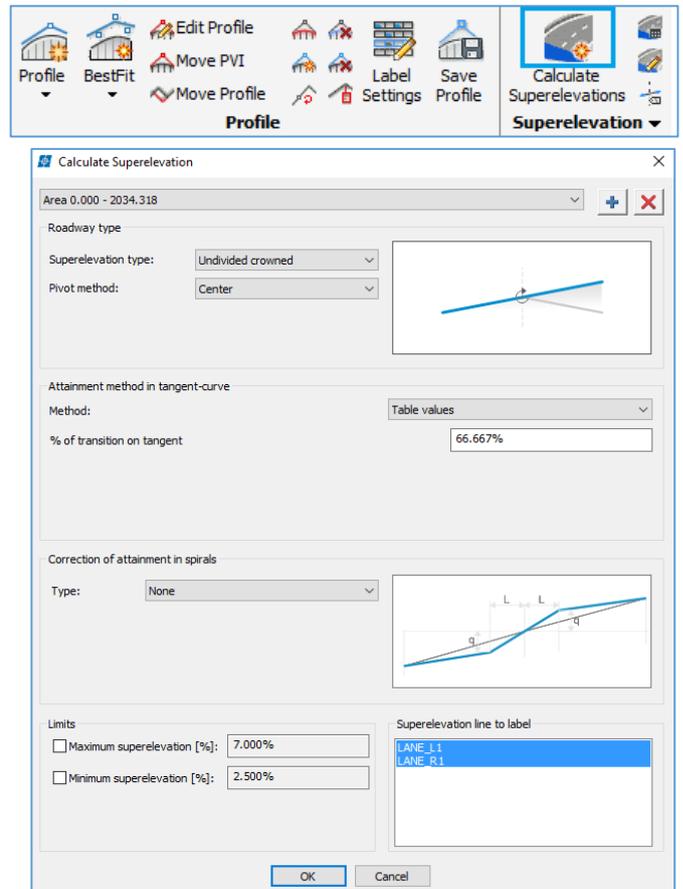
In the first example, user can barely control their values, while in the second one they can precisely define station, elevation, distance, slope and section of the next vertex point.



7. Calculate Superelevations

1. Define superelevations for both alignments with **Calculate Superelevations** command.

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

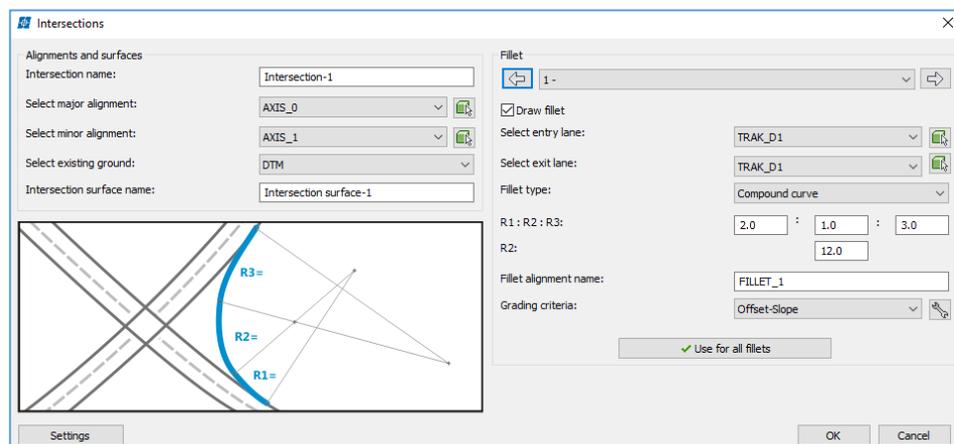
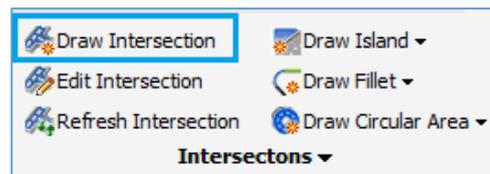


8. Draw Intersection

1. Continue with **Layout Ribbon Panel**.

2. Click on **Draw Intersection** icon to create an intersection.

3. After invoking the command, the following dialog box appears:



4. First enter the name of a new intersection.

5. Select the major and minor alignment and the existing ground.

6. Define the intersection surface name.

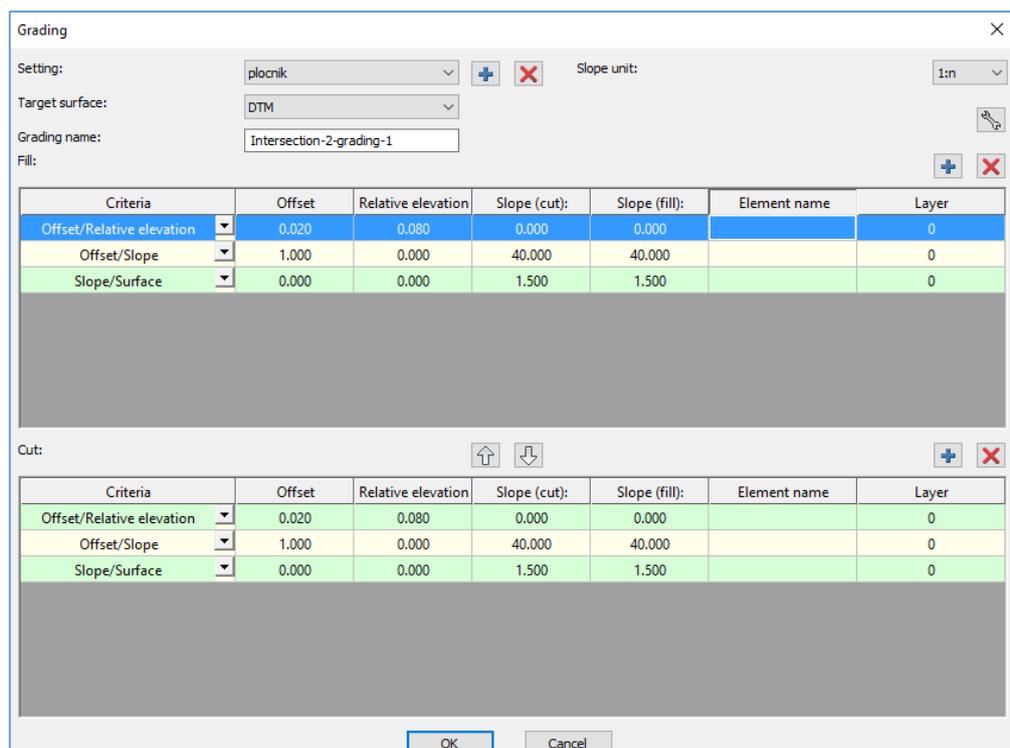
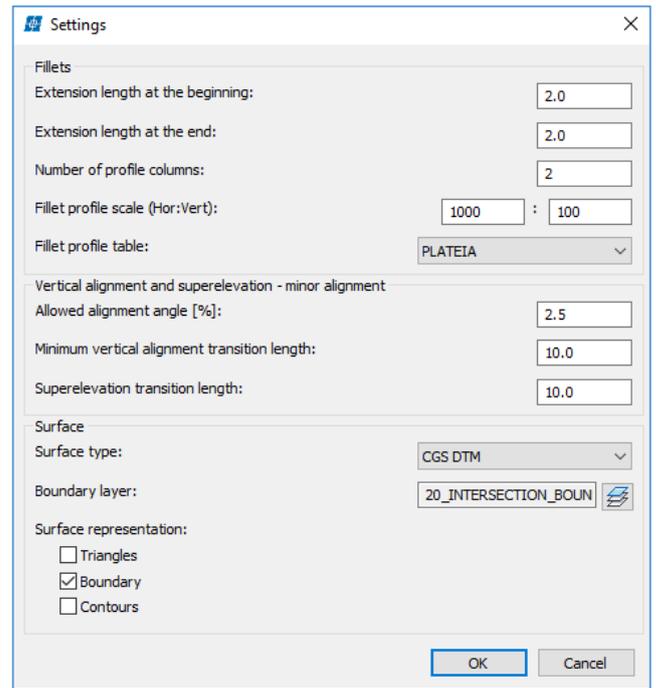
7. By clicking the buttons  and  the user can switch between the fillets in the intersection and define the parameters. The active fillet is shown in the drawing in bold.

8. If you tick the *Draw fillet* checkbox, the individual fillets in the intersection will be drawn. Then select an entry and exit lane of the intersection fillet and chose the fillet type. You can choose between three types of transition curves;

- arc,
- two arcs,
- compound curve.

9. Define the size of the radius. Then enter the fillet name and define the settings with the click on the button *Settings*.

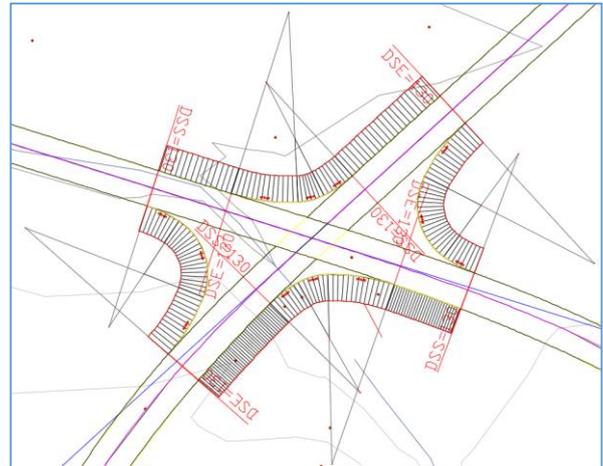
10. Select the button  to define new grading criteria. In the following dialog box define setting name, target surface and grading name. In the right upper corner is possible to change slope unit.



11. You can choose from different criteria:

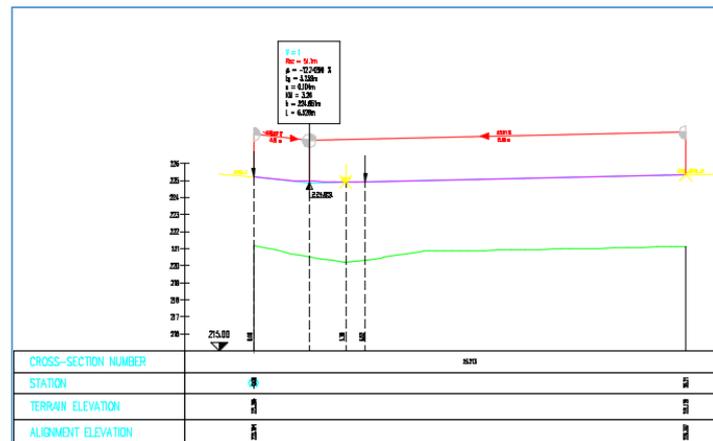
- Offset/Slope
- Offset/Relative elevation
- Slope/Relative elevation
- Slope/Surface
- Drape
- Offset/Drape/Elevation

From which criteria you select depend on what parameters will you have to define. After selecting the criteria, define offset length, relative elevation and slope. You can also define the element name and define his layer. With the button  you can add new sections.



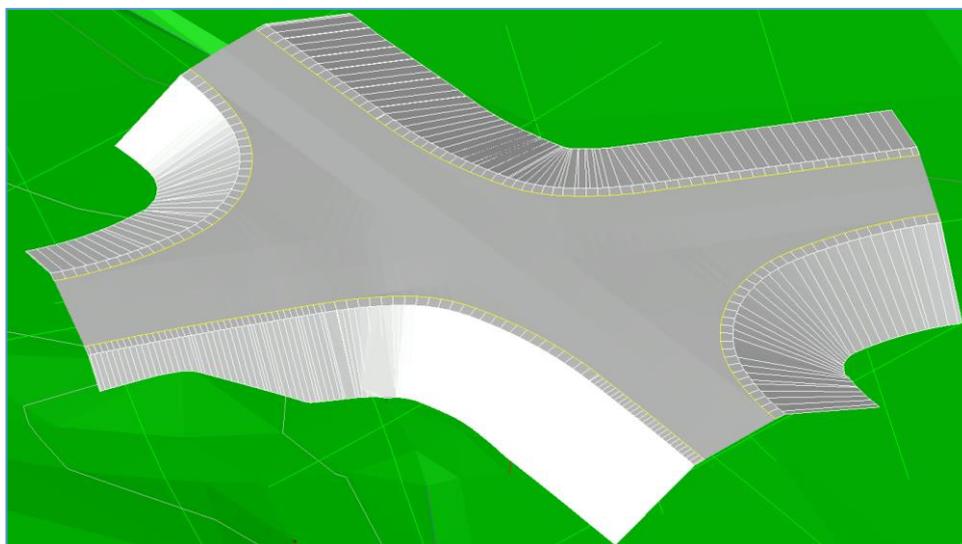
12. Press OK to confirm all defined intersection parameters and enter in the drawing the input point of the profiles of fillets.

13. This command significantly accelerates the intersection planning process with automatic adjustment of the slope and superelevations of the minor alignment according to the major alignment. The program automatically draws the alignment and the profile in the intersection. Slopes of the fillets are tangentially fitted to the lanes of the major and minor alignment. Then 3D road lanes and fillets are drawn.



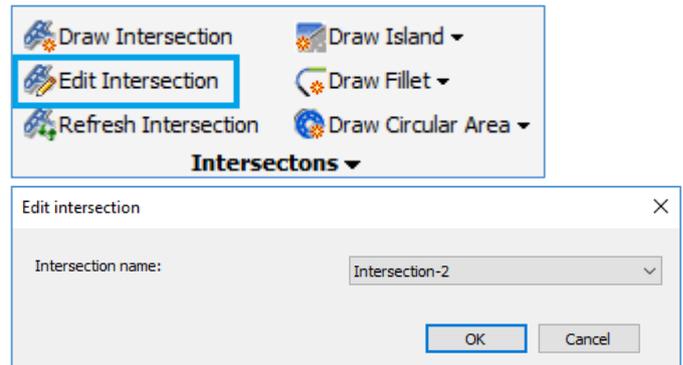
14. In addition, according to the defined criteria, the 3D gradients from intersection lanes to the selected ground are also drawn.

15. In the last step the program assembles a 3D intersection model or a DTM on the basis of all 3D elements of the intersection.



9. Edit Intersection

1. Select the command [Edit Intersection](#).
2. In the dialog box select the intersection for editing.
3. The dialog box *Intersections* appears, where intersection parameters can be edited. After editing the parameters, click OK.
4. The program again draws an intersection with all relevant elements.



WORKFLOW SUMMARY

Below is a brief workflow summary of how to create an intersection by using Plateia road design software.

Layout

- 1. Alignment Manager
- 2. Create Alignments
- 3. Create Sample Lines

Profile

- 4. Draw Profile View
- 5. Intersections
- 6. Draw Profile
- 7. Calculate Superelevations

Intersections

- 8. Draw Intersection
- 9. Edit Intersection