Plateia by CGS-labs

Projection lines

Tutorial/Workflow procedure

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Projection Lines Tutorial

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INTRODUCTION

Plateia offers the possibility to transfer points, 2D/3D lines and 3D objects from layout to profile and cross-sections and vice versa. This allows users to easily transfer and display objects between different views.
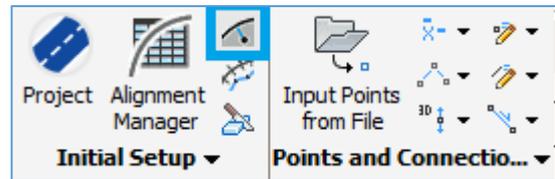
PROJECTED POINTS

1. Define Projected points in Layout

1. The active alignment is set as the one we wish to arrange the points on.

2. To define the projected points in the layout, select the Define Projected Points command (21M2). The command defines the points in the layout, which projection can be later shown in a longitudinal profile.


3. In the drawing define the point position or select the already existing object (point or block).

4. Continue with the definition of the point name and height.

2. Insert Projected points in Profile

1. On Profile Ribbon Panel, click on Draw Projected Points icon (31E1 command). With this command, any points that were defined in the layout and the position of which was defined, can be drawn in the longitudinal profile.
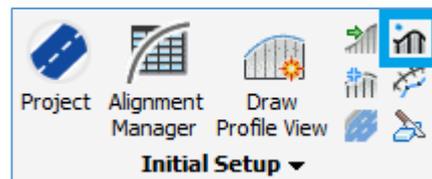

2. After pressing the command, the following dialog box appears.

Points appear in the list, that is adapted in the selected layout file to the current axis or all projection points, if the below option *Draw points in all profiles* is selected. You have to tick the points you wish to put in the longitudinal profile. By checking the points block name the display of the point with an element block (*BLOCK*) can be selected.

In the drop-down menu, you select on what height the points that have no specific height are projected. You can select between terrain, profile, reference height of the longitudinal profile or the actual height 0.

If you wish to put all the projection points in, irrespective of which axis they were adapted to when they were defined in the layout, tick the *Draw points of all axes* checkbox. If you wish to insert the points in all profiles not only in the current tick the *Draw points in all profiles* check box.
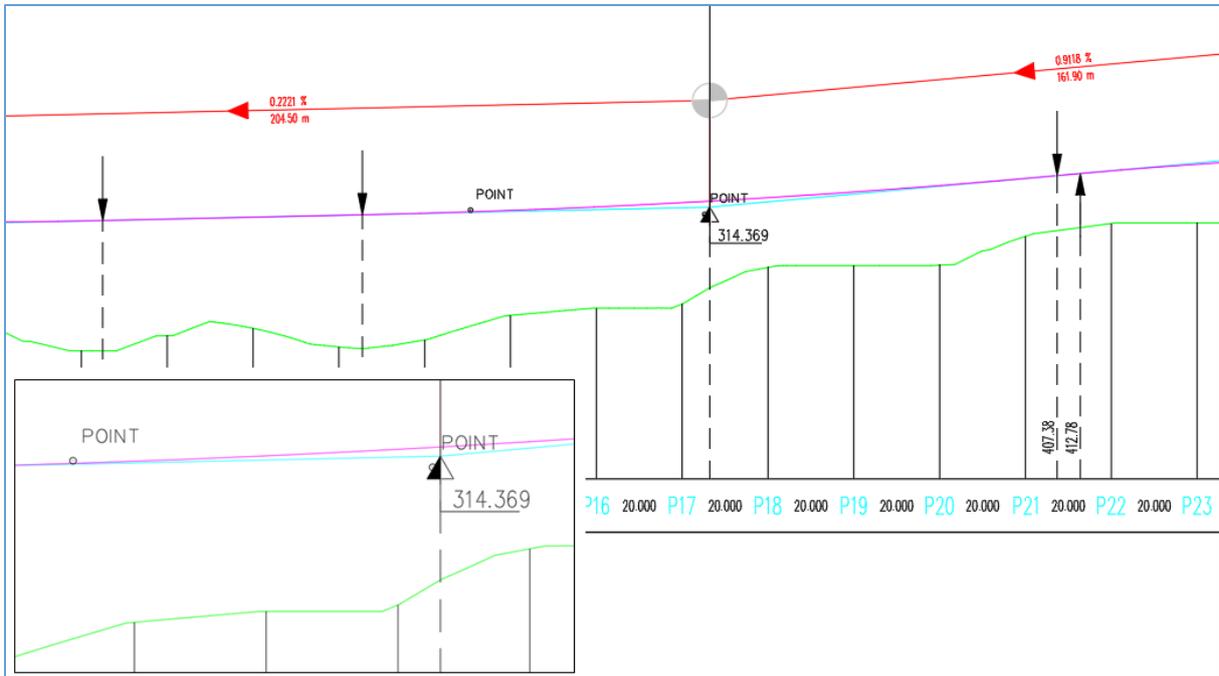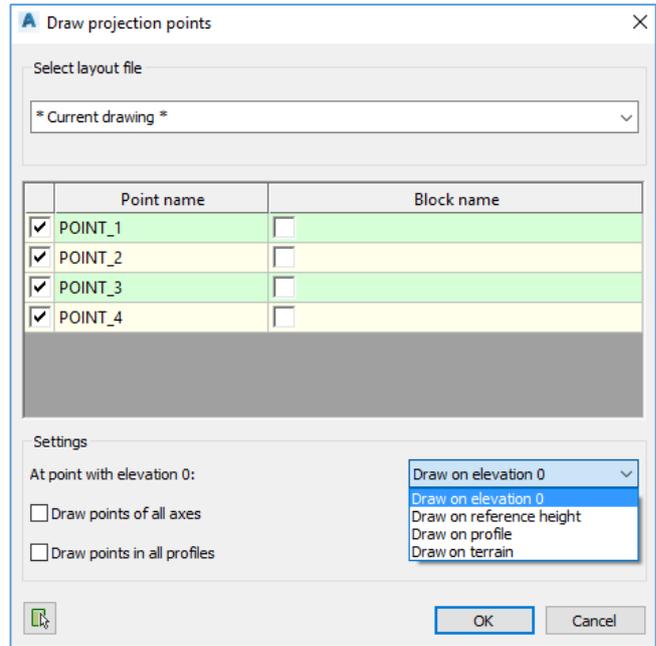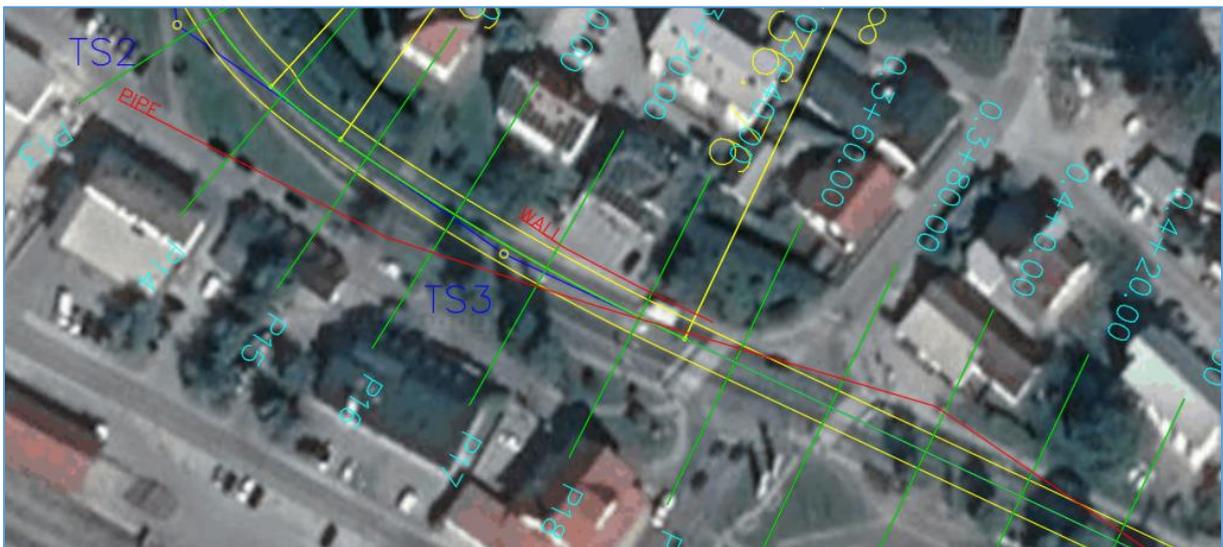
PROJECTION LINES

1. Define Projection lines in Layout

To define the projection line select the Define Projection Lines command (21M3). The command defines the line in the layout, the projection of which can be later shown in a longitudinal profile and cross-sections. The label is used as an identification when transferring data from the layout drawing to longitudinal and crosses-sections.
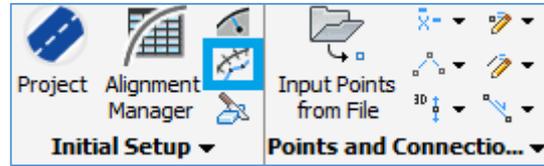

First draw the polyline (line, polyline, 2D polyline or 3D polyline) in the situation and define its elevation. Press the command 21M3 and select the borders lines. In the command line define the line name. Confirm with *Enter.*
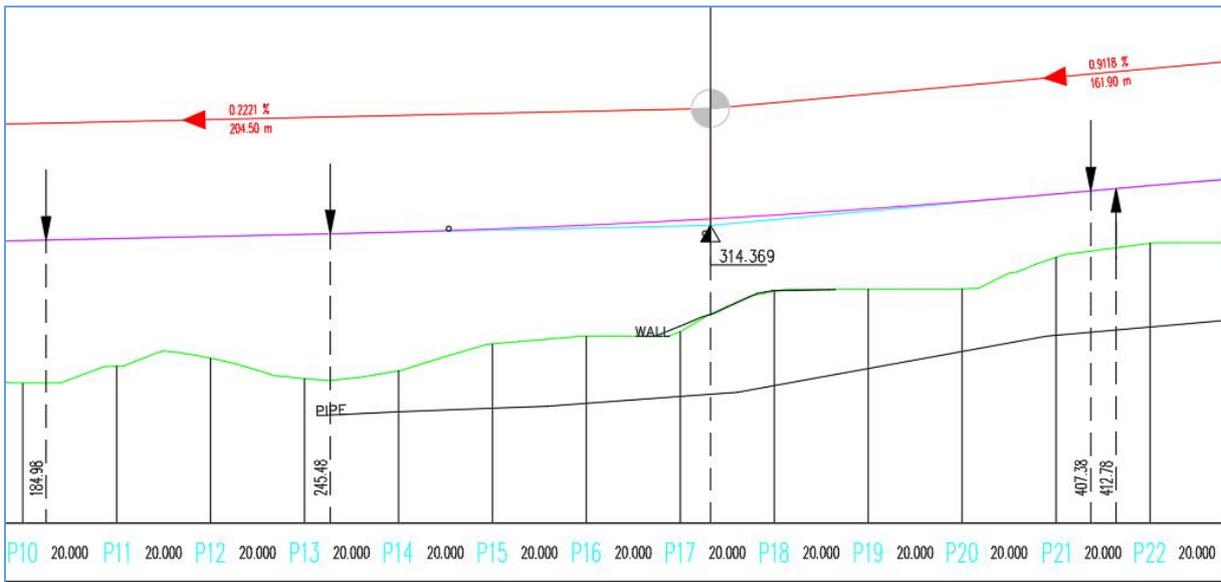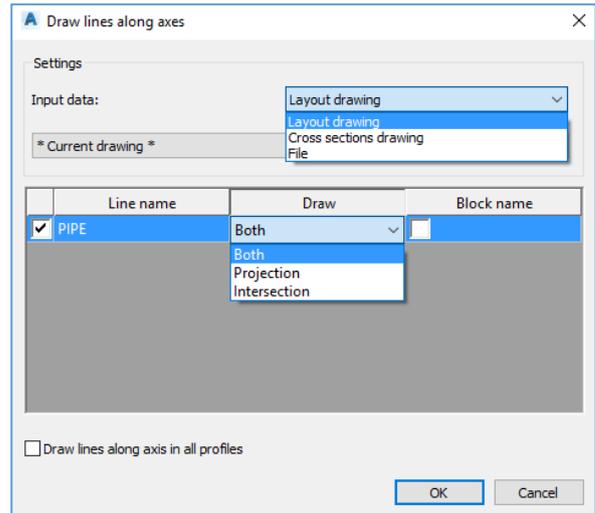

2. Insert Projection lines in Profile

To transfer the lines along the alignment from the layout or cross section in the profile, select the Draw Projection Lines command (31E2).
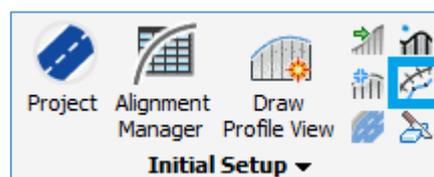
In the following dialog box select the type of the input data. Your input data can be a layout drawing, a cross sections drawing or a file.

In the *Draw* column, select one of the two modes of displaying the line: either a projection or an intersection with the vertical plane, defined by the longitudinal alignment. In the latter case, the intersections can be displayed as points or blocks, specified in the *Block name* column.

3. Insert Projection lines in Cross Sections

To transfer the polyline from the layout or profile to the cross sections, select the Draw Projection Points command (41K2).

From the list of the projection lines, select the line to insert in the cross-sections.

If you select the *Lines without elevation interpolate on terrain* checkbox, then the intersection points without elevation will be interpolated on the terrain line. If the option is not selected, the intersection points without elevation will be drawn on the bottom of the cross-section.

If you want to insert the AutoCAD block that symbolizes a certain object, check the *Insert block with intersection point name* check box. The block name must be the same as the name of the intersection line and it must be on one of the AutoCAD search ways. The search ways are defined with the *Options* command.
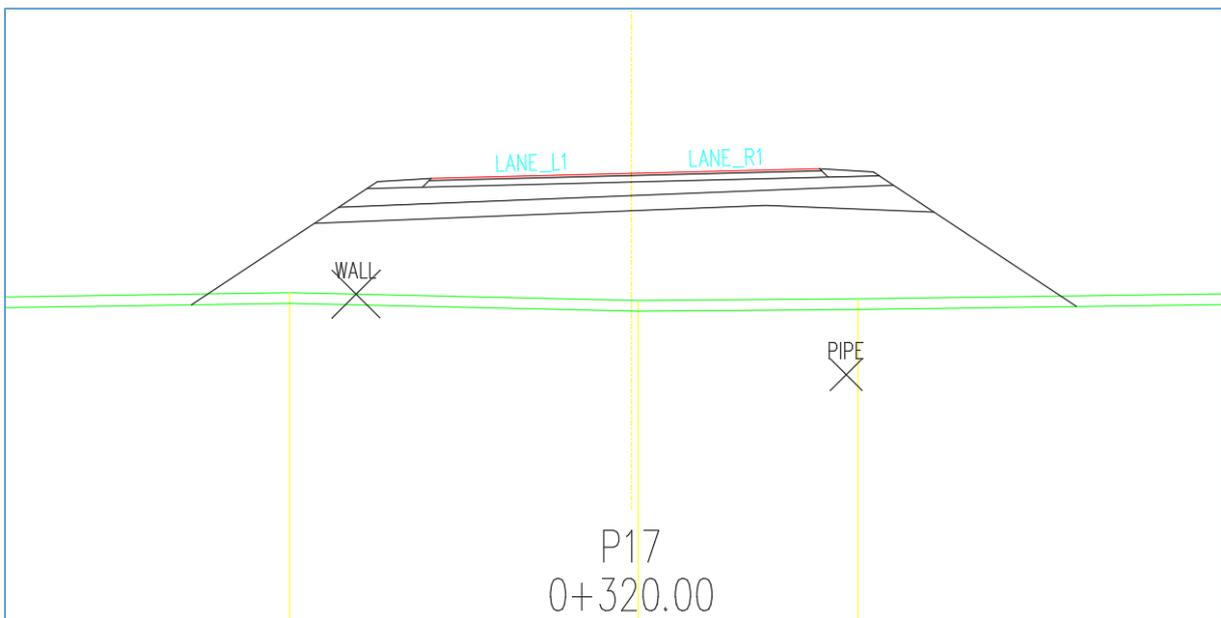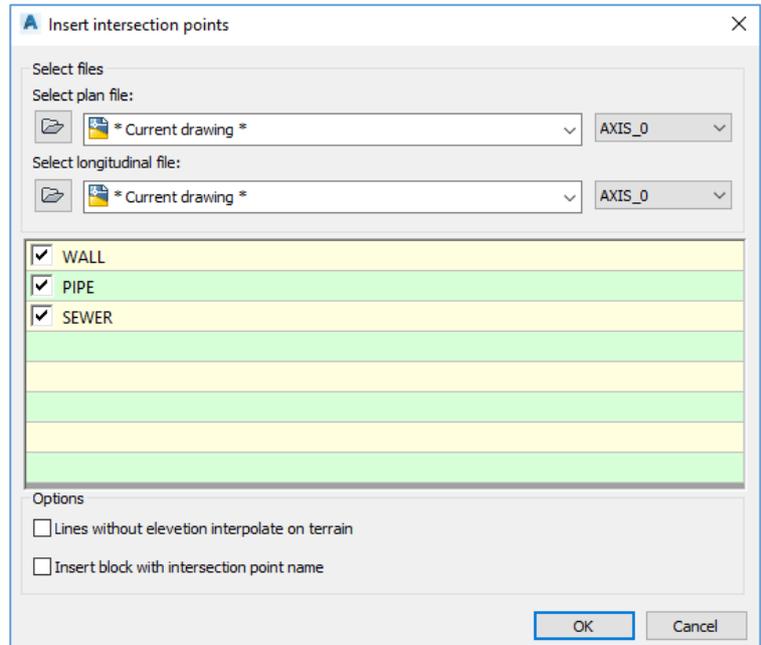
SECTIONS OF 3D OBJECTS

1. Define 3D object in Layout

With the Define 3D Object command (21M4), the 3D objects can be named and then projected into profile and cross-sections.
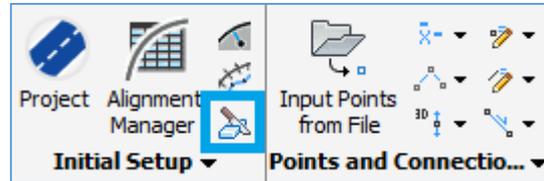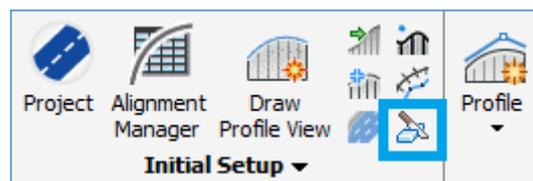

Press the command and select the 3D object (solid element) in the layout. In the command line write the 3D element name.
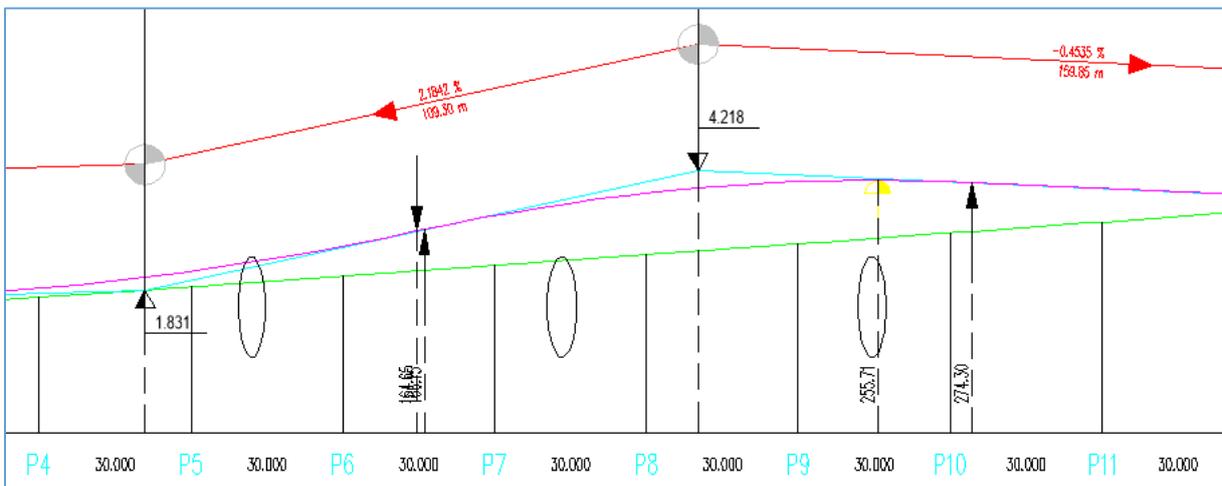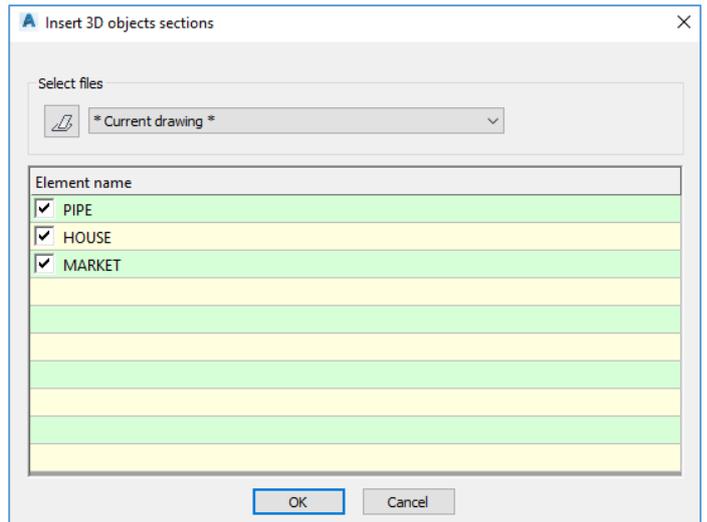

2. Insert Section of 3D object in Profile

To insert a section of 3D object in the profile, select the Insert Sections of 3D Objects command (31E3).
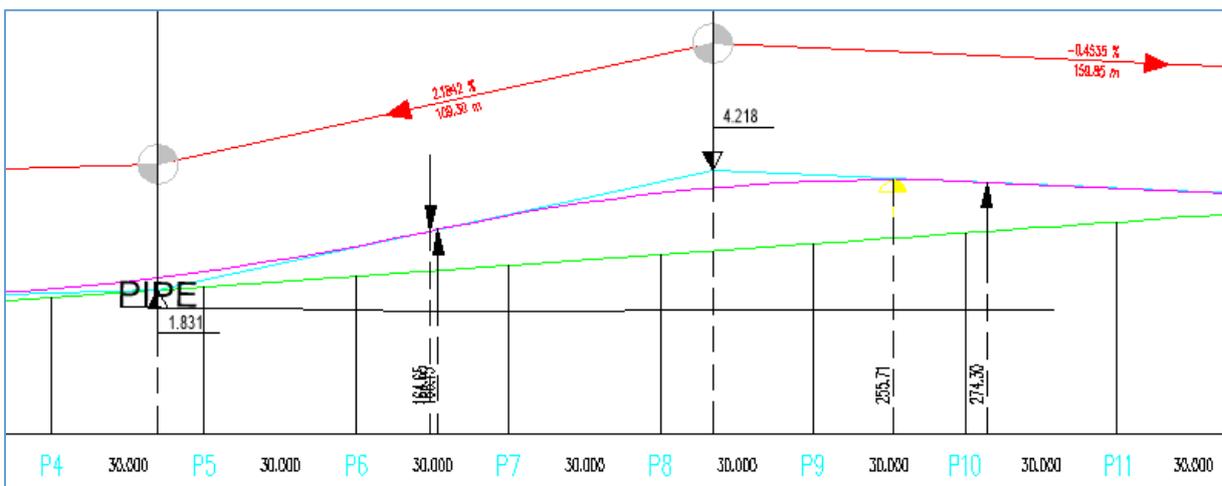
In the following dialog box select the element name you want to insert in the profile, and press OK.

In this case it is important, that 3D object crosses the alignment.

If a 3D object does not cross the alignment, you can display it in the profile with additional 3D polylines, drawn as a part of a 3D object. Set this 3D polylines as *Projections lines* with the command Define Projection Line (21M3). In the next step insert these Projection lines in profile with the command Draw Projection Lines (31E2).

A Insert 3D objects sections

Select files

* Current drawing *

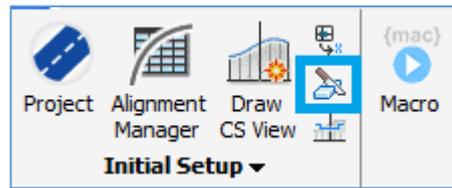Element name
- ☑ PIPE
- ☑ HOUSE
- ☑ MARKET

OK   Cancel

Inserted section of a 3D object in the profile view (pipe).

Inserted 3D object in the profile view (pipe).

3. Insert 3D object in Cross Sections

To transfer object from layout to cross sections, select the command Insert 3D Objects (41K4).

After starting the command, the following dialog box appears. It contains all 3D elements that are located in the layout of the current drawing. Select the element that you want to insert and click OK.

The elements become visible in the cross-sections.
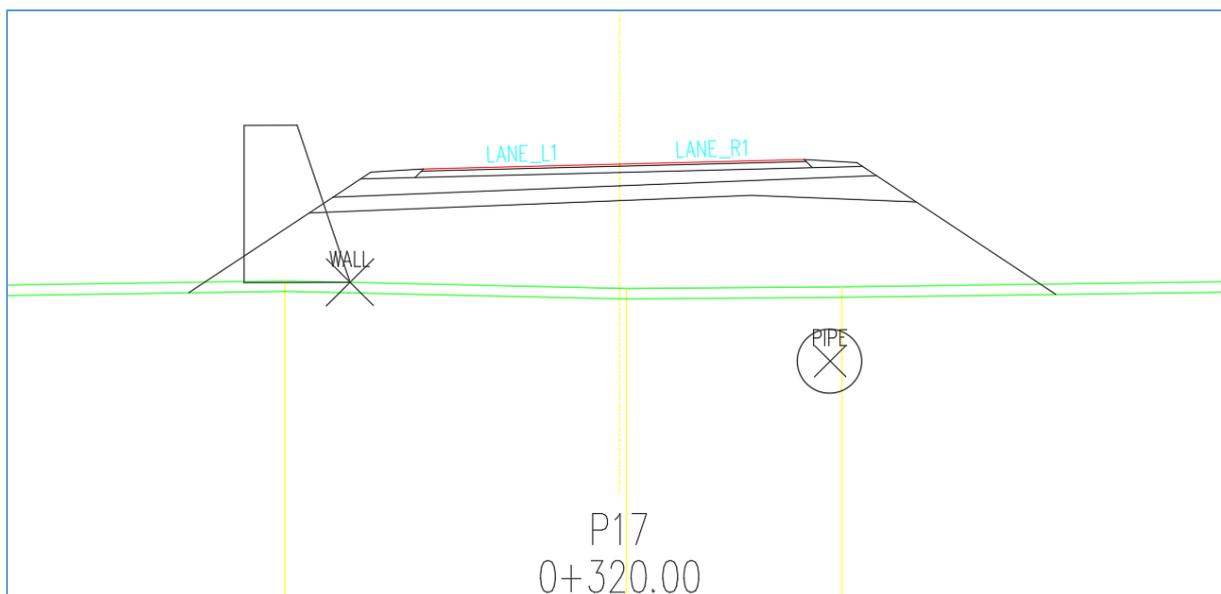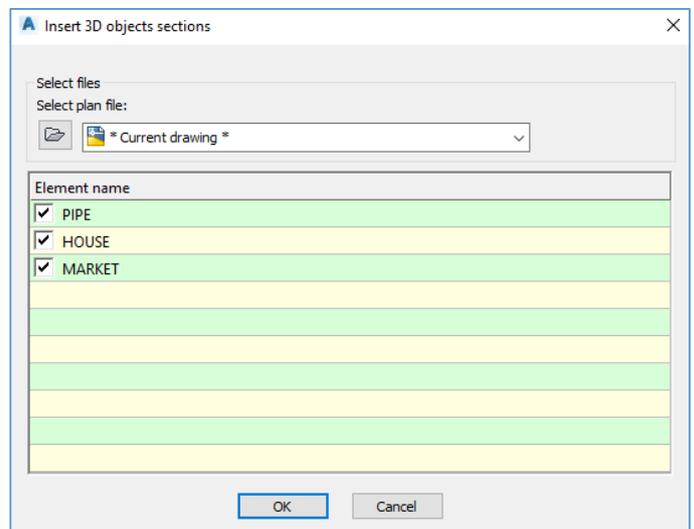
In the next step we have to planimetry the inserted object. After creating a 3D model we get the solid object. The final 3D solid model can be used as input data in other BIM program solutions. You can see the results in the following pictures.
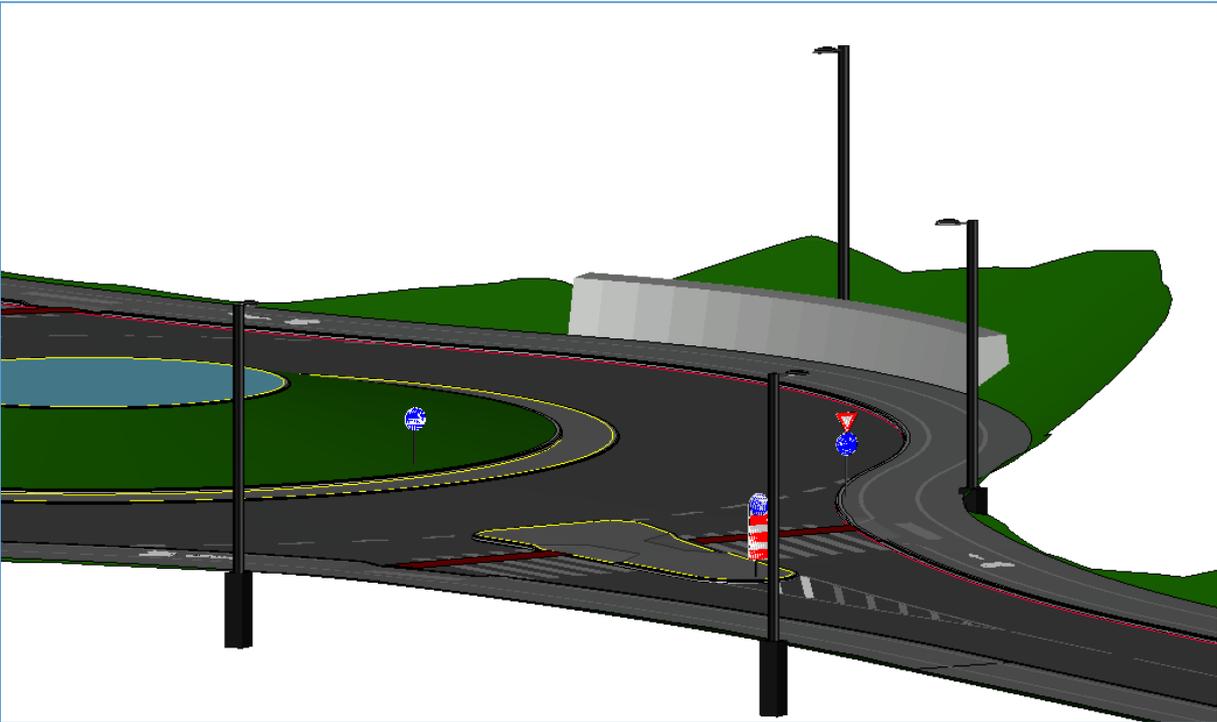
PROJECTION POINTS

1. Define Projection Points in Cross Sections

The projection points can automatically be inserted on the TCS element in all cross-sections that belong to the selected set by using the Define Projection Points command (41K1).


In the following dialog box define a set of cross-sections.

In the drop-down menu, select the definition method. You can choose between four defined types (fill left, cut right, fill right, cut right), option *Other* and option *Automatic*. The automatic method looks and finds critical points of cuts and fills by searching for the outermost points of slopes or roundings if they exist.
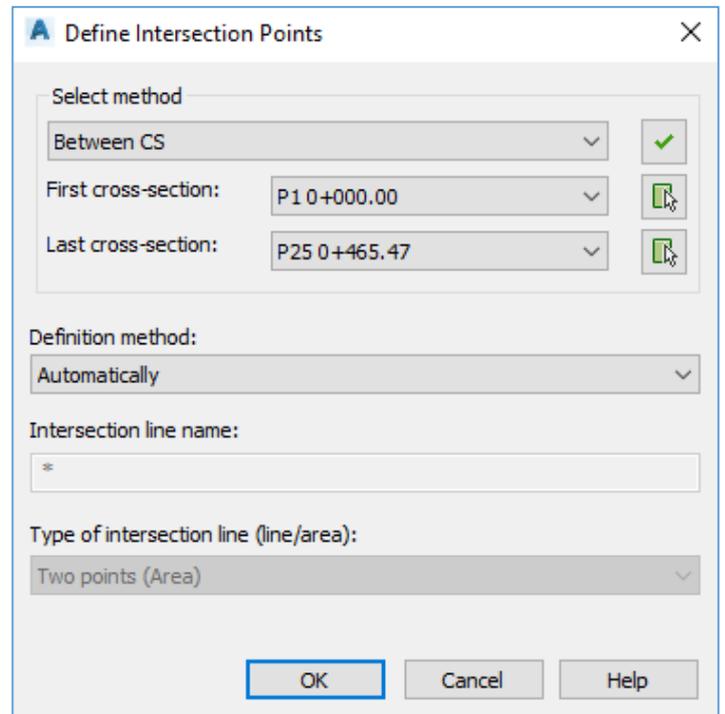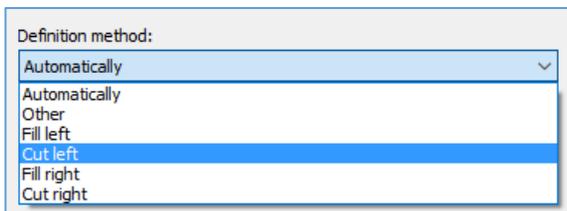
Proceed with the selection of the type of projection line and press OK. In case you choose the *Other* definition method, you have to also write the projection line name. In the next step select the desire TCS element in the drawing.
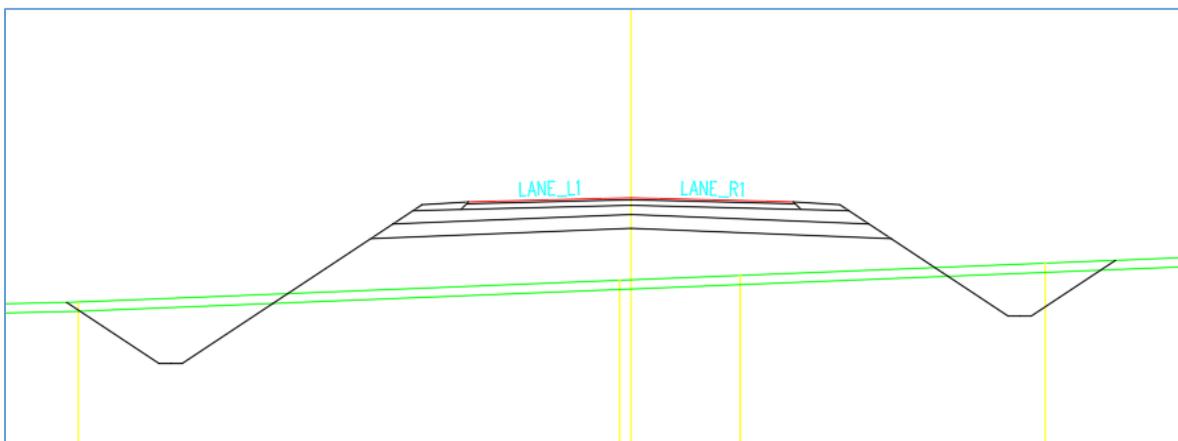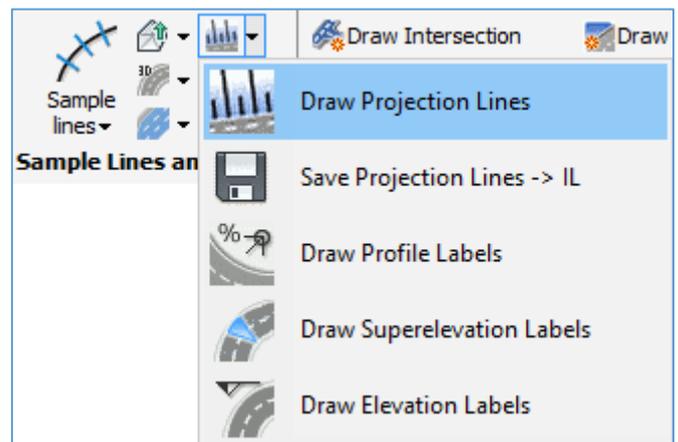
In the cross-sections, the program marks the projection points and their names.
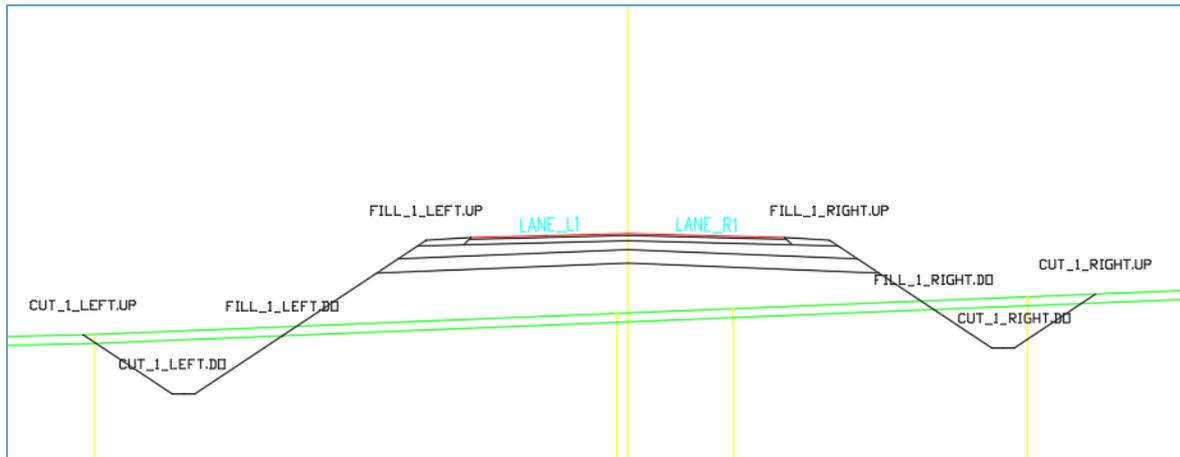


2. Draw Projection Lines in Layout from Cross sections

To insert the projection lines in the layout, select the Draw Projection Lines command (21M1). This command is also used to draw cut and fill hatching.

The following dialog box appears.
The projection lines that we wish to draw in the layout, have to be selected from the list.

In the section Draw, you can select option 2D or 3D. If you select the 2D, all line coordinates will have an elevation of Z=0, instead if you select the 3D, the line coordinates will have an elevation that was defined in the cross-sections.

If you want to connect the cut and fill lines, tick the checkbox *Connect cut and fill lines*. If you switch on the possibility *Embankment boundary*, around the limits of the box cuts and fill, closed polyline will be drawn.
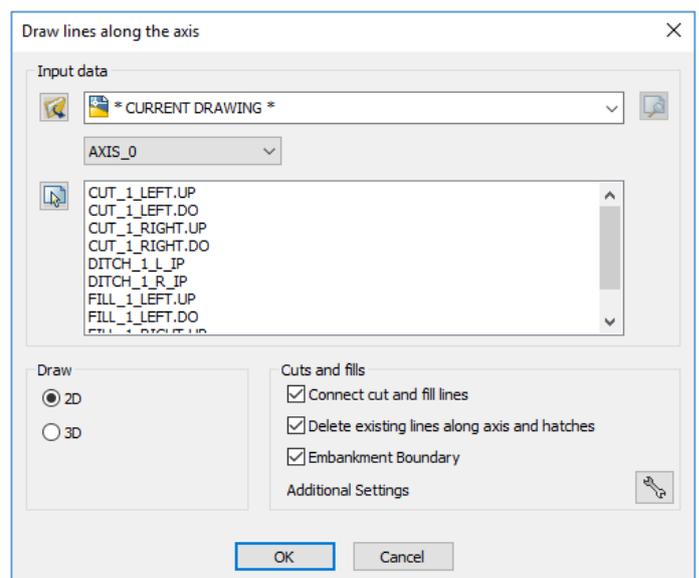
To color the cuts and fill select the button and tick the checkbox *Color cuts and fills*. In the *Additional Settings* dialog box, you can also choose to hatch cuts and fils.

If you want to change the cut or fill color, click the button and select the desired color.
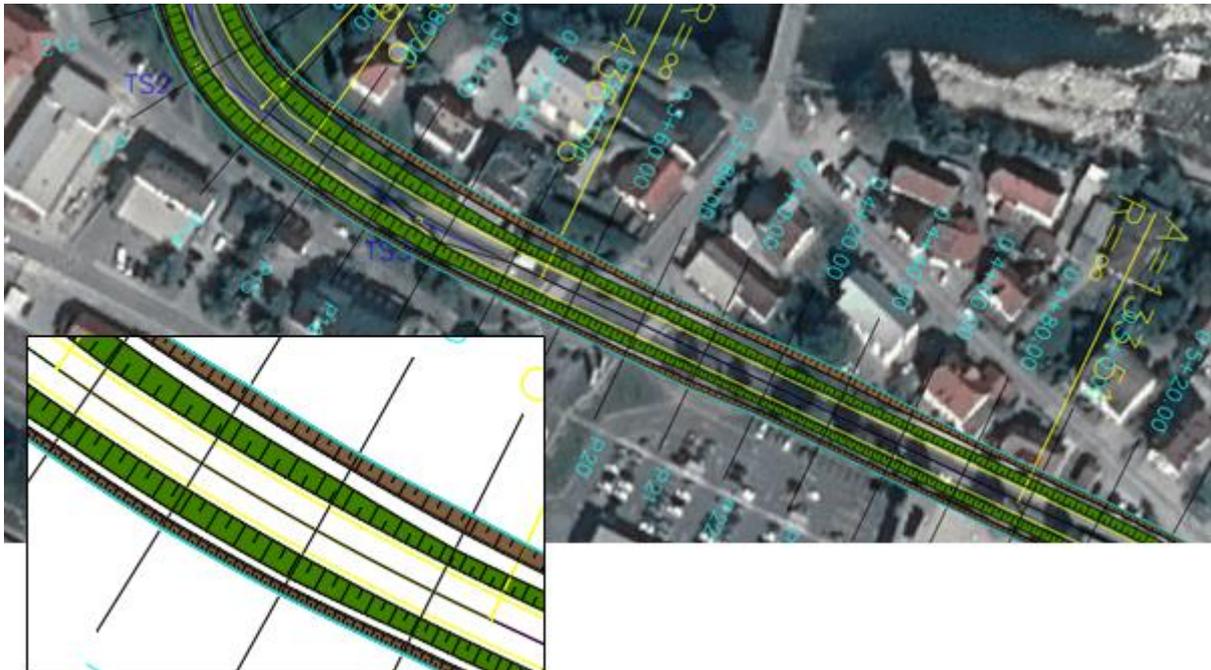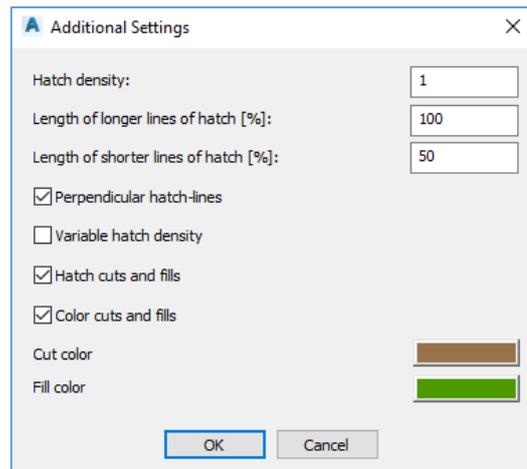

3. Draw Projection Lines in Profile from Cross sections

To draw the Projection lines in the Profile from Cross sections, select the Draw Projection Lines command (31E2).
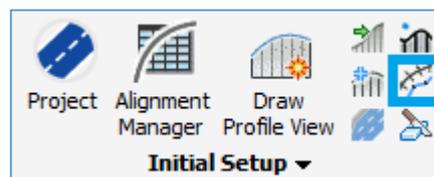
The following dialog box opens. As input data select a *Cross sections drawing*.

All projections lines, which were defined in cross sections, appears on the list.

In the *Draw* column, select one of the three modes of displaying the line: either a *projection* or an *intersection* with the vertical plane, defined by the longitudinal alignment, or *both*.
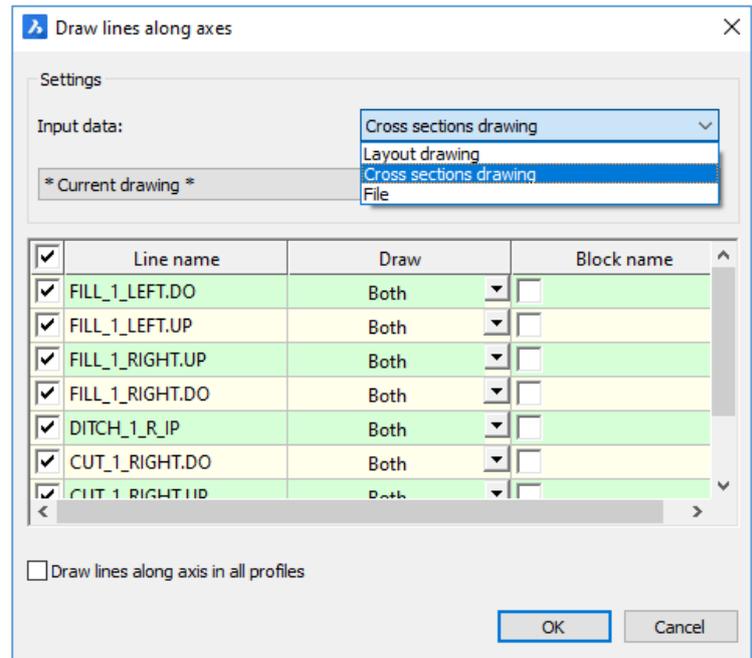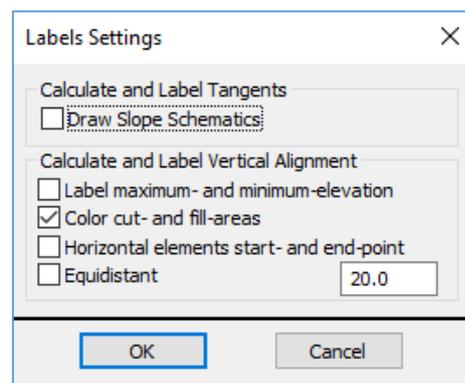

4. Coloring Cut and Fill in Profile

If you want to color the cut and fill areas in the profile, select the Label Setting command.
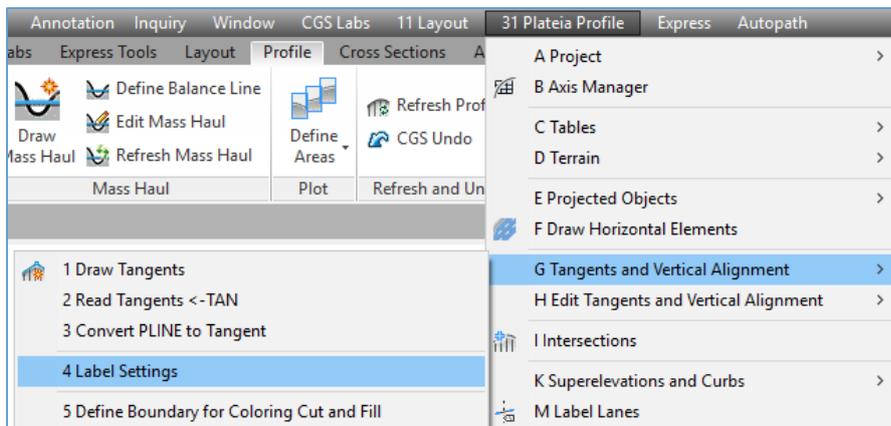
In the following dialog box tick the *Color cut- and fill- areas* check box. After pressing OK select the tangent labels position and press Enter.

When editing tangents by using Plateia commands, values in the tables will be updated automatically.
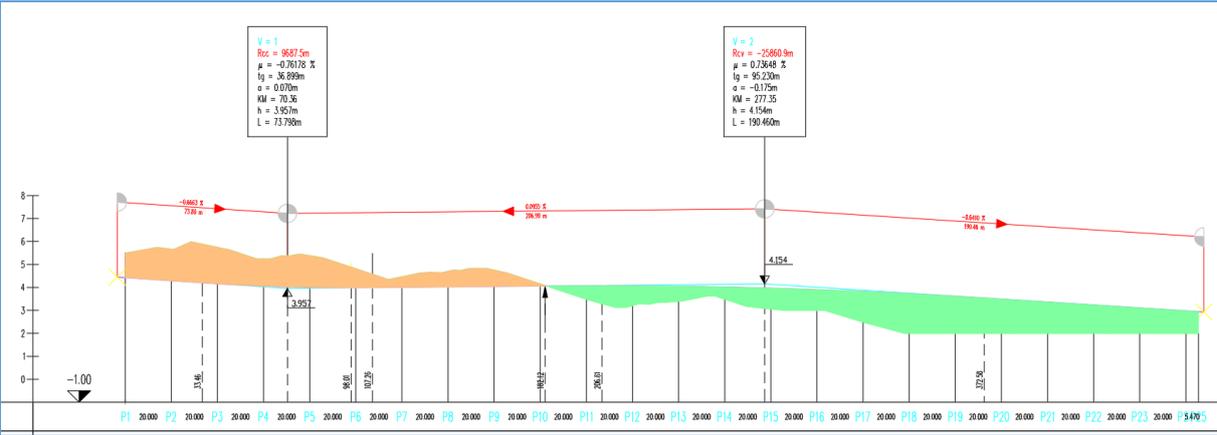
WORKFLOW SUMMARY

Below is a brief workflow summary of how to transfer points, lines and 3D objects which were created in the layout to profile and cross-sections.

Projected Points

- 1. Define Projected Points in Layout
- 2. Insert Projected Points in Profile

Projection Lines

- 1. Define Projection Lines in Layout
- 2. Insert Projection Lines in Profile
- 3. Insert Projection Lines in Cross sections

Sections of 3D Objects

- 1. Define 3D Object in Layout
- 2. Insert Section of 3D Objects in Profile
- 3. Insert 3D Objects in Cross sections

Projection Points

- 1. Define Projection Points in Cross sections
- 2. Draw Projection Lines in Layout from Cross sections
- 3. Draw Projections Lines in Profile from Cross sections
- 4. Coloring Cut and Fill in Profile