Plateia
by **CGS Labs**

Visualizing Water Flow with Contour Lines

Tutorial

CGSLABS

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Visualizing Water Flow with Contour Lines

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INTRODUCTION

In this tutorial, we will delve into two distinct methods to effectively depict water flow using contour lines. The first method begins with creating terrain, offering a detailed representation of the topography. Subsequently, the terrain is displayed with contour lines, and in the next step, the elevation of each contour line is presented.

The second method employs the "Interpolate Roadway Contours" command, which draws arrows indicating the slope direction.

EXAMPLE 01: Representation of terrain with contour lines

In this tutorial, we will work on a drawing in which the alignment, sample lines, profile, and cross-sections are drawn. Additionally, 3D polylines representing road edges are also created in the model.
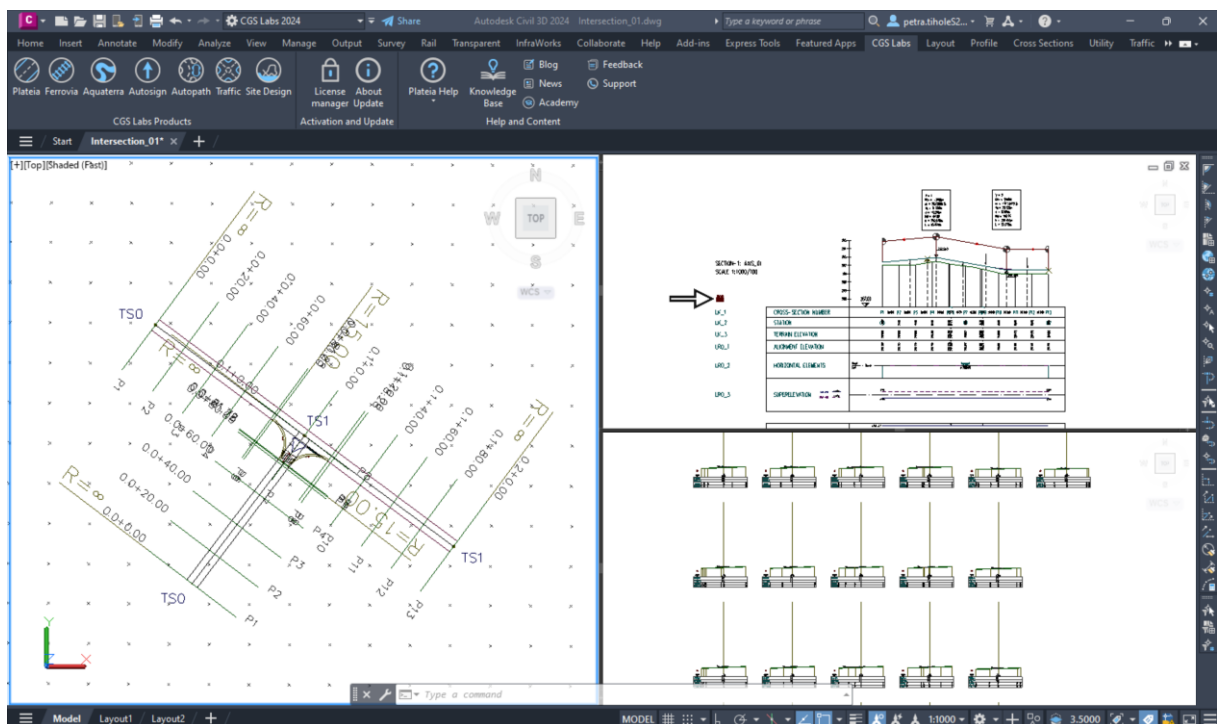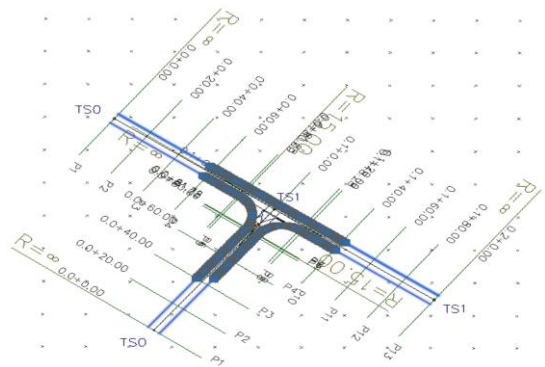
1. Creating the roadway surface

1. Run the "Terrain (11L1)" command.

2. Define the surface name.

3. Select "Points and breaklines" from the drop-down menu and click the plus button. Then, select all the 3D road edges that represent the roadway edges.

Note that if the road has a centerline crown, it is necessary to select not only the edges but also the centerline.

4. Then, check the box at the "Contours" option and click on the settings button.

5. In this dialogue box, you can change the colour and layer of contours. At the same time, you can also specify the major and minor intervals. In our case, we want the contour lines to be drawn more densely, so we decrease this interval.
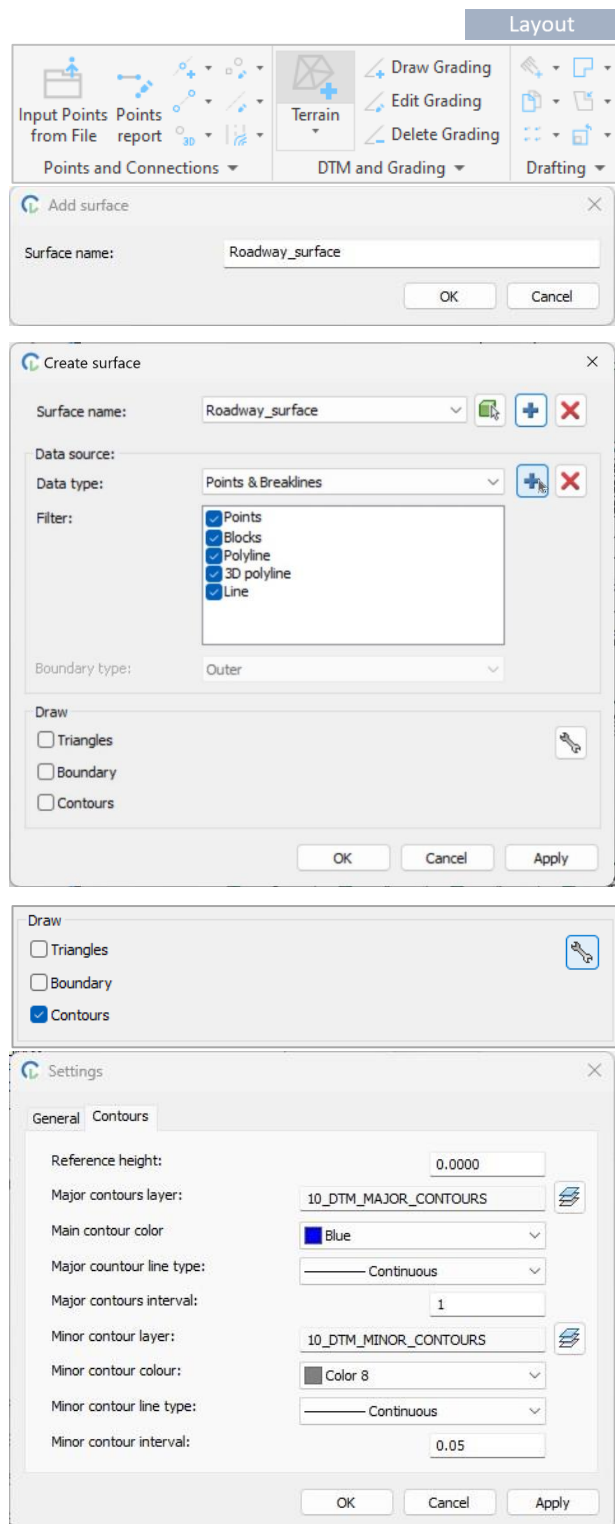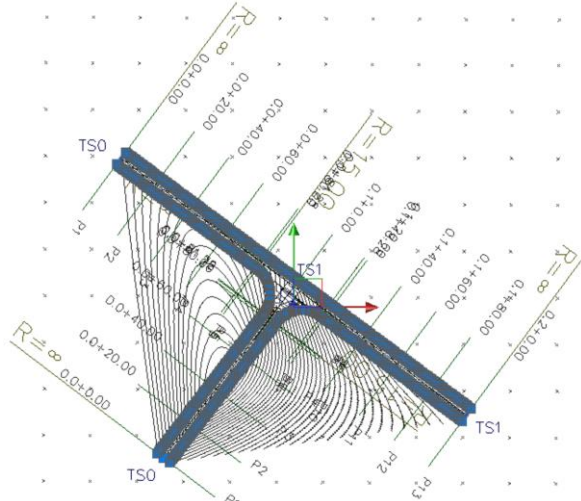
Once you have set all of these parameters, click OK twice, and the roadway surface will be drawn in your drawing.

Image: Roadway surface, shown with contours:
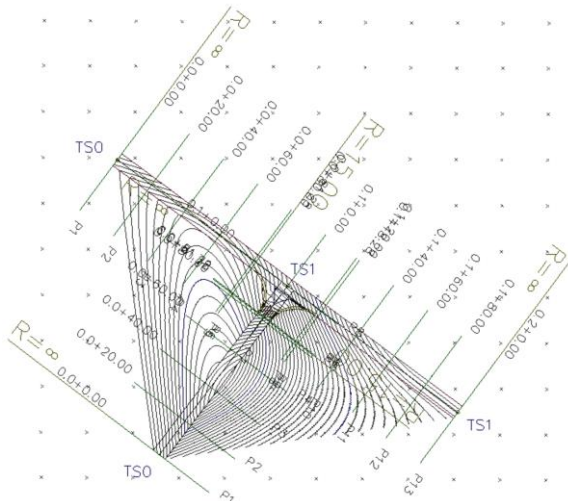
The boundary of the terrain is marked in blue:

1.1 Boundary

If you are bothered by contour lines drawn outside the roadway, you can define a boundary.

1. You draw the boundary as a 2D or 3D polyline. In the upper-right image, it is shown in blue color.

2. Run the "Terrain (11L1)" command again.

3. Select the previously defined surface from the drop-down menu.

4. Select "Boundary" from the drop-down menu and click the plus button. Then select **outer** for the boundary type. (It is already automatically selected.)

Then click the plus button. After that, select the boundary directly in the drawing, and press Enter.

5. Next, press OK.

The terrain is now clipped along the boundary. On the outer side of the boundary, we no longer have elevation data.
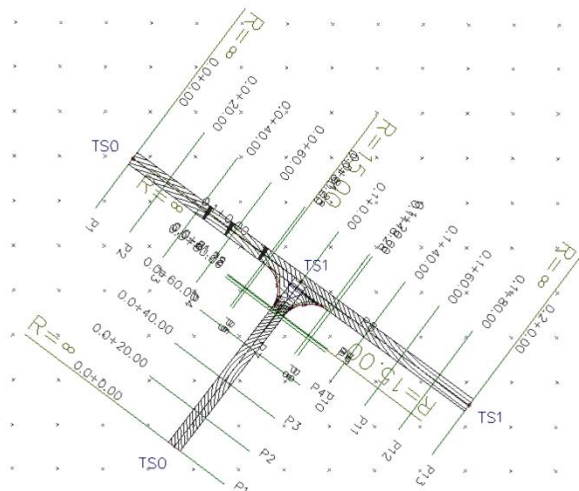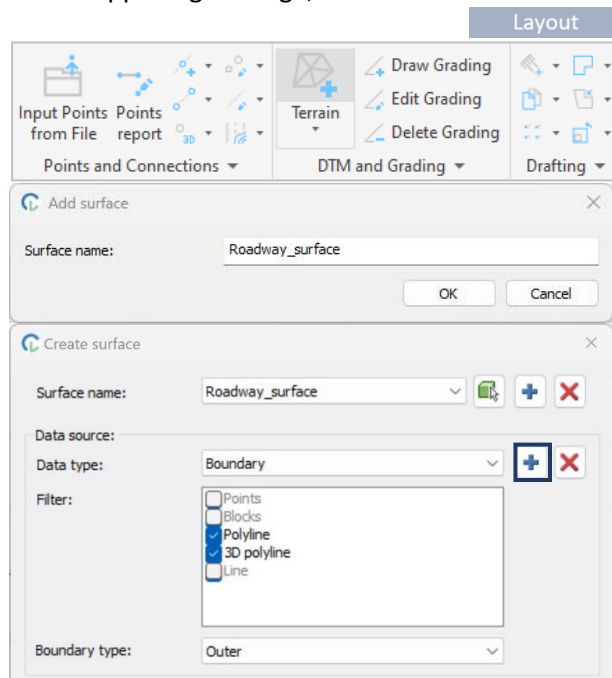
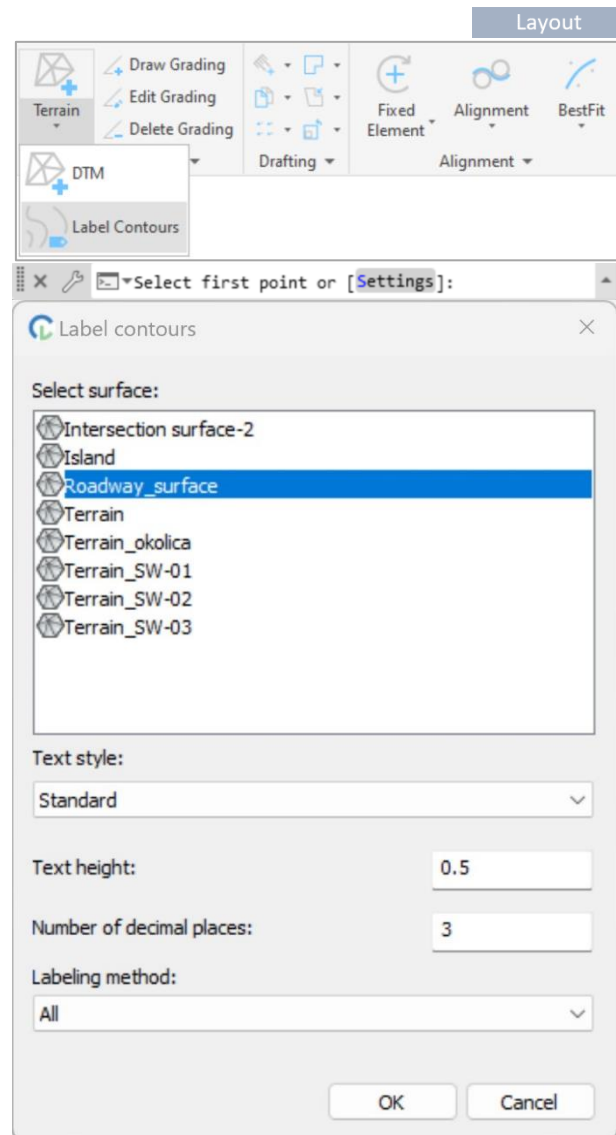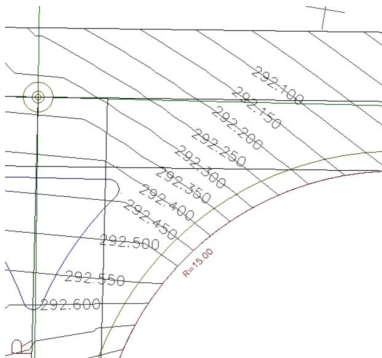## 2. Determining the elevation

1. Run the "Label Contours (11L2)" command.

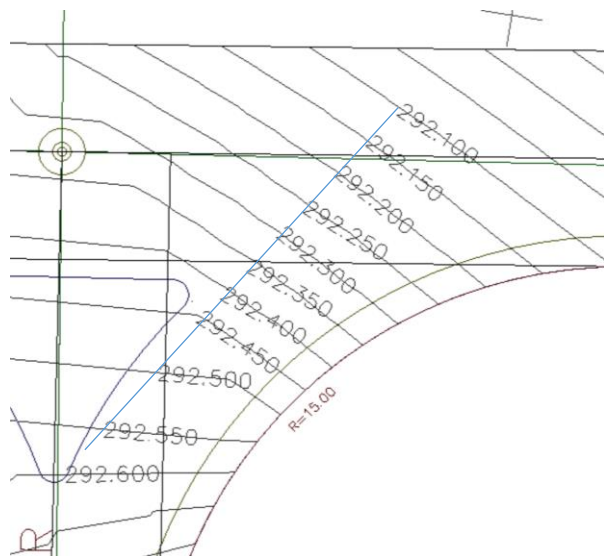2. Click on "Settings" in the command line.
3. It opens a new dialogue box, where you define:
   - surface,
   - text height, and
   - number of decimal places.

4. Click OK and then define two points along which the elevations will be displayed.
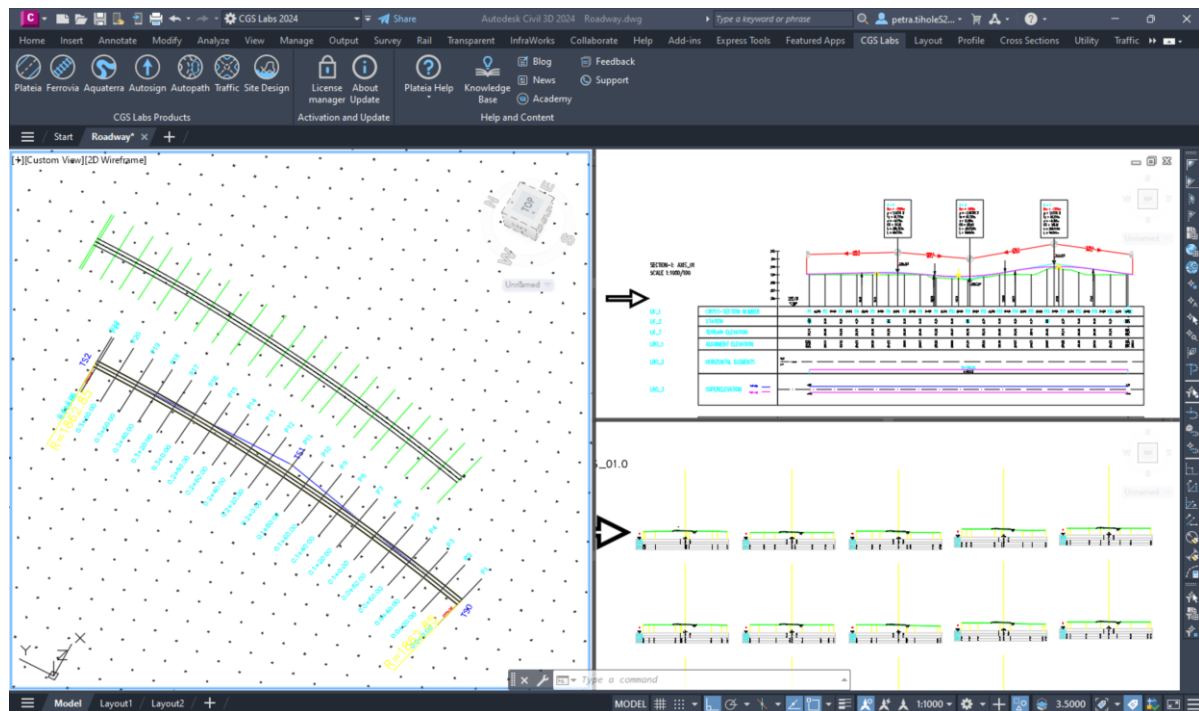

If you move the line drawn with two points (highlighted in blue in the right picture), the labels will move interactively.
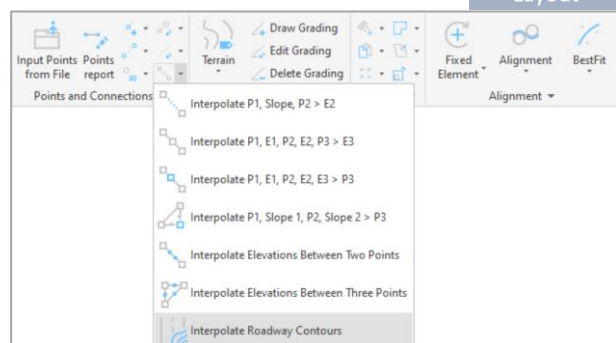

EXAMPLE 02: Interpolate Roadway Contours

NOTE! This command draws contour lines only between two 3D polylines.


1. Run the "Interpolate Roadway Contours (11T7)" command.

2. In the drawing, you select the first 3D polyline and press Enter if you want contours to be drawn along the entire 3D polyline. Then, you select another polyline and press Enter.

3. After that, a new dialog box opens where you specify the elevation interval and the drawing contour method. If you want arrows indicating the slope to be drawn, click the Settings button and check the box next to the arrows option. Specify the arrow interval and height, then click OK.
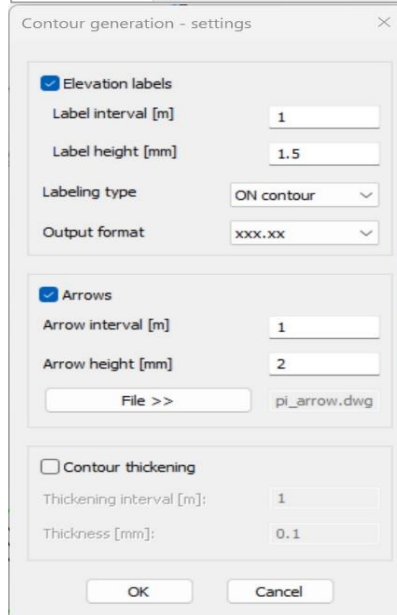
Arrows are drawn in 2D, contours can be drawn as 2D or 3D polylines.