**AutoCAD® Civil 3D®**

**Profile Views, Data Bands, and Styles**

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CI4513 How do I get a profile view that meets my expectations? In this class, we will do a profile view world walk-through and discuss how to produce meaningful profile views. You will learn about the graphic design of a profile view and how to label it to suit your requirements. Class attendees will benefit from the possibilities of styles for profile views and data bands.

**Learning Objectives**

At the end of this class, you will be able to:

- Create meaningful profile views
- Label profile views with data bands
- Define and edit profile view styles
- Define and edit band styles

**About the Speaker**

Thomas Martin has worked for UDS GmbH in Hamburg for over 10 years. During this time, he gained his diploma in computing science and geography with the main emphasis on image processing/GIS at Hamburg University. His focal points at UDS are CAD in connection with database development, application development, and picture recognition. From the start, he has worked with Autodesk® products. In the last three years, he has specialized in AutoCAD® Civil 3D®. He advises engineering firms and public agencies, such as the Department for Protection of Historical Monuments (Denkmalschutzamt) Hamburg. He also conducts training courses for AutoCAD® and AutoCAD® Civil 3D®. In AutoCAD® Civil 3D®, he likes especially to focus on styles, grading, and corridors. At events, he presents and trains these products too.

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Profile views belong to the most complex elements in AutoCAD® Civil 3D®. Possible settings for the display of profile views are as varied as their requirements are different. For example, in Germany, my home country, hardly one profile view resembles another. Each engineering consultant and every company sets different standards for the appearance of a drawing. AutoCAD® Civil 3D® offers nice and complex tools for creation and display of profile views. This lecture should help you to adjust the appearance of profile views to your needs.

1 Meaningful profile views

This chapter deals with the relevant buttons in the profile view ribbon, basic properties of profile views, as well as hatching in profile views. These topics introduce simple tools for adjusting display of profile views quickly.

1.1 The profile view ribbon

The starting point for editing profile views is the context-sensitive profile view ribbon. The ribbons’ group Modify View shows a button Profile View Properties, with which the properties of the profile view can be selected. Extend this button to edit the style of the profile view directly, using Edit Profile View Style.

1.2 Simple Profile View Properties

Find the profile view properties in the dialog Profile View Properties. The dialog is divided into several tabs.

Information Tab
Define the name of the profile view and the style to be used. In addition, a description can be allocated, which, however, is not relevant to the display.

Stations Tab
Position the station range along the alignment here. Use the option Automatic to show the vertical range along the complete alignment. To show only one segment, select the option User Specified Range. The station range refers to the horizontal axes of the profile view.

Elevations Tab
Civil 3D® can also automatically generate the vertical range. The program analyzes the vertical ranges of the profiles in the profile view. Manual input even permits the definition of minimum and maximum. The profile view can also be split here.
Profiles Tab
This tab shows a list of the profiles of the alignment allocated to the profile view. Define here which profiles should be drawn in the profile view. The styles to be used can also be defined and edited here. The subject of this handout is profile views. Therefore, profile styles and profile labeling are not dealt with here.

1.3 Hatches in profile views

Hatches provide a good means of simplifying the legibility of profile views. Settings for these functions can also be found in the dialog for the Profile View Properties on the Hatch tab. On the left side select the desired type of hatch with a click. This automatically opens a corresponding entry on the right side of the dialog. Here you would normally define one upper and one lower boundary for the hatching. These boundaries must be profiles which are also displayed in the profile view. Define the style of the hatching in the Shape Style column.

If you create a new style for the hatching, or edit an existing style, take care to select the entry Profile in the pull-down View Direction.
2 Data Bands

Display diverse information above or below a profile view with the help of so-called Data Bands. This chapter shows how data bands can be added to and removed from a profile view. Basic settings for these bands are also shown. The adjustment of data band styles will be explained in Chapter 4.

2.1 Add and remove data bands

Add data bands in the dialog Profile View Properties on the Bands tab.

There are various types of data bands in Civil 3D®. Each of these types has a range of styles, which differ in their properties according to band type. The styles for the band type Profile Data therefore have other properties than the styles of the band type Superelevation. Band styles will be covered in Chapter 4.

In the dialog shown above, first select the desired band type via the pull-down in the upper area. Then define the desired style in the pull-down beside it. As soon as you click on the button Add, a new data band is added to the list of bands shown in the profile view.

Bear in mind that data bands can be displayed above and below the profile view at the same time. Before adding, select the correct location.
These buttons sort the bands in the list. The sort sequence influences the display in the profile view. You define the sequence in which the bands are shown in the profile view.

You can also remove bands again from the profile view with one click on the delete button.

### 2.2 Adjusting Data Bands

In the Band list, you can not only read off the band type and style of individual bands, but also define basic settings for displaying the data bands.

Not every type of data band has the same setting options here. However all share the column Gap. Define the distance to the next data band. The value 0 means the bands are touching.

**Data source**
The band types **Profile Data** and **Vertical Geometry** show data from two profiles or one. In the columns Profile1 and Profile2 identify the profile from which you wish to display data.

**Intervals and Weeding**
The distance between the labeling in the data band is defined in the columns **Major Interval** and **Minor Interval**.

- Deactivate this option if you define intervals. If this option is active, the intervals of the vertical grid will be taken as the distance between the labeling.

So much information can be displayed within a data band, that the individual labels overlap. Define an adjustment distance in the **Weeding** column. Enter a positive distance to display less labeling. The greater the value, the greater the distance between the individual labeling.

**Labels**
Another method of tidying up the labeling can be found in the column **Stagger**. Define here, whether the labeling should be displayed staggered.

**Ctrl-Click**
You can manipulate individual labels directly in the profile view. Select the label with Ctrl-left click and drag it using the grip.
3  Profile View Styles

Now you can see how to generate and edit your own style for your profile views.

Using the **Edit Profile View Style** button in the ribbon, you enter the dialog to edit the profile view style. Before editing the style, you should copy an existing style, which approximates the desired result. The advantage: you can leave the basic style unaltered and continue using it.

This dialog also consists of several tabs from which the various profile view display options are set.

![Profile View Style Dialog](image-url)
3.1 Changing the values

A brief overview of various options for profile view styles follows.

*Vertical exaggeration*

The factor for the **vertical exaggeration** defines how strongly the profiles and therefore the profile views are stretched in the direction of the vertical axis. A value of 1 means no stretch, a value of 10 stretching to the factor of 10. A vertical exaggeration can appreciably facilitate the readability. Note that the other values on the Graph tab are dependent on these settings.

*Grid and Title*

Use the **Grid** tab to turn the grid lines on and off. You can also limit the lines to the displayed profiles and set distances. Play with these settings and see the results in the profile view with one click on **Apply**.

> In case the profile view doesn't update, the command `regen` helps. That goes for all settings that you define in profile view.

Use the tab **Title Annotation** to modify the title of the profile view, as well as the labeling of the axes.

*Axis*

With the tabs **Horizontal Axes** and **Vertical Axes**, define the intervals and labeling of all four possible axes.

3.2 Text components

You can define and edit labeling with many tabs in the dialog **Profile View Style**. For example, define labeling for the axes or the title of the profile view. The **Text Component Editor** always opens if you click on a button for text editing. Here, you can assign font, font size and contents of the description fields.
4 Data Band Styles

For every band type, there is a specific type of band style. Within a band type, all styles have the same format and identical setting options.

In the dialog Profile Data Band Style, both tabs, Band Details and Display, are particularly important for you.

4.1 Band Details

Here you define the data band layout. You can adjust the band height, the band title labeling and its’ position and distance to the band.
This is also where you determine the labeling and ticks of the individual components in the band. The type and number of components varies from band type to band type. The content of the labeling for the band title and the components is defined in the Label Style Composer. The labeling can be assembled from different components such as texts and lines.
4.2 Display Components

Here you can switch certain components to visible/invisible. You can also define layers, colors and line width for the individual components. These tabs can also be found in the dialog for editing the profile view style. It often makes sense to simply deactivate some components, or to activate standardly deactivated components. Take care to check the display settings in the styles. If necessary, place colors and lines on BYLAYER, so you can adjust the appearance of profile views via the layer.
5 Reuse of Styles and Data Bands

It can be a time-consuming task, creating profile view styles and band styles to suit your requirements. The advantage of Civil 3D® is that you only have to do the work once, because you can reuse these styles any time. In the best case you simply set your style in a new profile view and import a previously created band set.

In this connection, the functions for importing styles from other drawings are also certainly interesting.

5.1 Reuse Profile View Styles

If you have generated a new profile view, simply activate your previously created style in the Profile View Properties dialog.

5.2 Reuse Data Bands

You can reuse individual Band styles for individual bands.

A useful possibility is offered by saving and importing complete band sets. Just click on Import Band Set to import a previously saved band set. Take note that not only the bands shown above the profile view, but also those shown under it are saved in one individual band set.
In this lecture you have learned how to control the appearance of profile views in Civil 3D®. Although these tools are complex and comprise many functionalities, it's worth taking a closer look. In this way, sophisticated and informative profile views can be generated directly in Civil 3D®. One strength of AutoCAD® Civil 3D® are the styles, which also occur in profile views and data bands. The styles are reusable at any time and can simply be imported into other drawings.