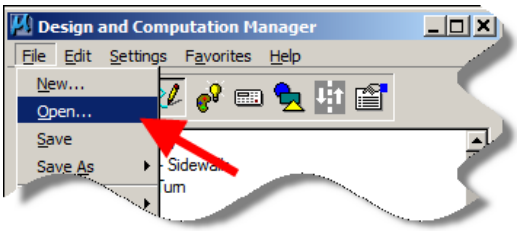
COGO Profiles, Alignments

Design Manual
Chapter 21
Automation Tools
Instructions

Originally Issued: 09-20-10
Revised: 09-30-11

1. To plot a COGO Profile Alignment into the MicroStation file, use the **Design and Computation** (D&C) **Manager**.

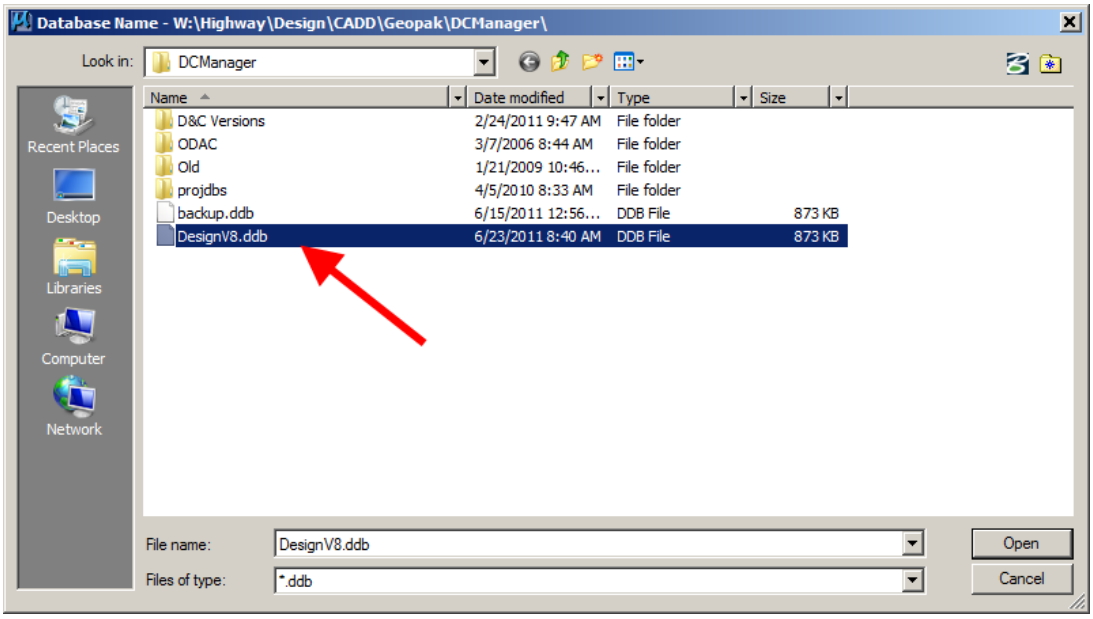
   Open D&C and choose *File* > *Open*, as shown at the right, to select the ".ddb" file for the Office of Design.



   Browse to:

   W:\Highway >
   Design >
   CADD >
   Geopak >
   DCManager >
   DesignV8.ddb

   as shown below.



   Typically, it will be necessary to draw two profiles for the plan. One will be the existing ground profile and the other will be the proposed profile. The steps listed below include sub-set information, labeled with an "**E**" for **Existing** profile alignments and "**P**" for **Proposed** profile alignment instructions.

2. Select the appropriate **D&C** command for drawing the profile, by *browsing* to the location shown below and selecting (*double-clicking)* the command:

E.
Existing Ground 10to1 Scale (100 Scale).

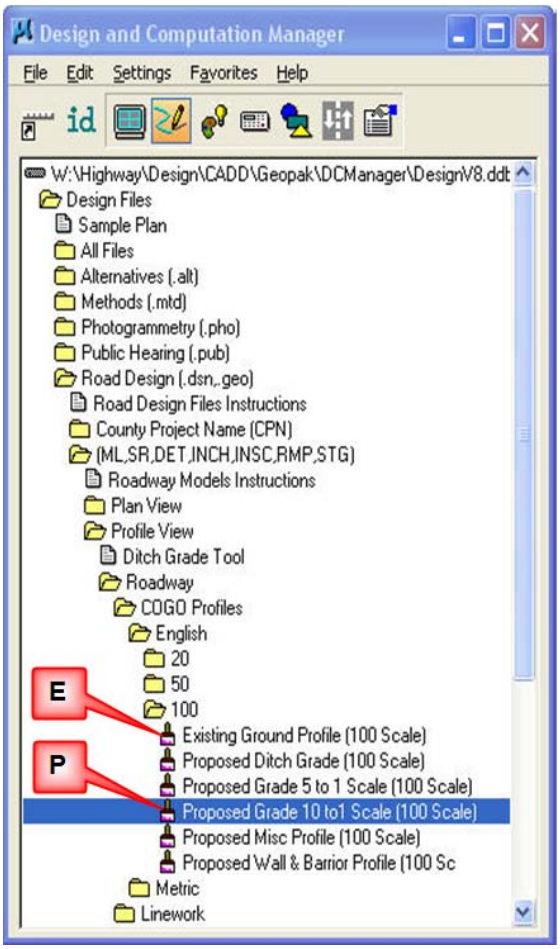
The full path for the above command (and as shown at the right) is as follows:

Design Files >
Road Design (.dsn, .geo) >
(ML,SR,DET,INCH,INSC,RMP,STG) >
Profile View >
Roadway >
COGO Profiles >
English >
100 >
***Existing** Ground Profile …*

P.
Proposed Grade 10to1 Scale (100 Scale).

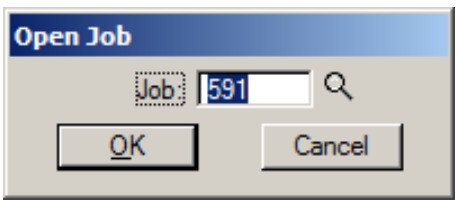
The full path for the above command (and as shown at the right) is as follows:

Design Files >
Road Design (.dsn, .geo) >
(ML,SR,DET,INCH,INSC,RMP,STG) >
Profile View >
Roadway >
COGO Profiles >
English >
100 >
***Proposed** Grade 10to1 …*



3. After the above command has been selected, the dialog shown at the right should display, with either **"Existing …"** or **"Proposed …"** shown in the dialog title bar.
Click the **Draw Plan & Profile** button, as shown.

If a "**Job"** has not been selected, the **Open Job** dialog should display, as shown at the right. *Browse* (🔍) and *Select* the correct **Job** number, and *click* the **OK** button to continue.



4. The **Draw Plan & Profile** dialog is then displayed, as shown by the two examples below.

   NOTE: Do not *click* on (highlight) an alignment name in the "**Select Profile to Draw"** area until all other options have been selected or set. As soon as a **Profile** name is selected the next step will begin.

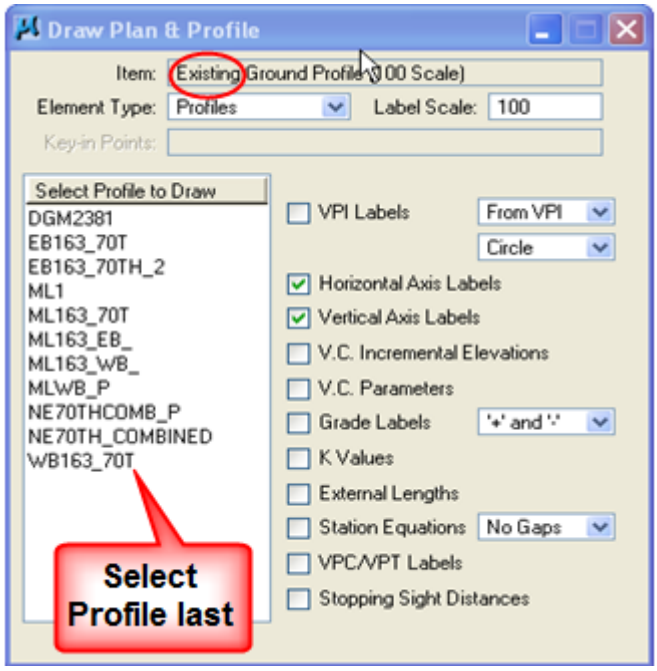
E.
Existing Ground

In the **Draw Plan & Profile** dialog:

a. The settings for an **Existing Ground** Profile should be similar to those shown in the image at the right.

b. No **VPI Labels** are necessary for Existing Ground Profiles.

c. After all settings have been made, move to the **Select Profile to Draw** area and *click* on the **Profile** name that you want to have drawn. The **Profile** dialog will open, as shown in step 5.

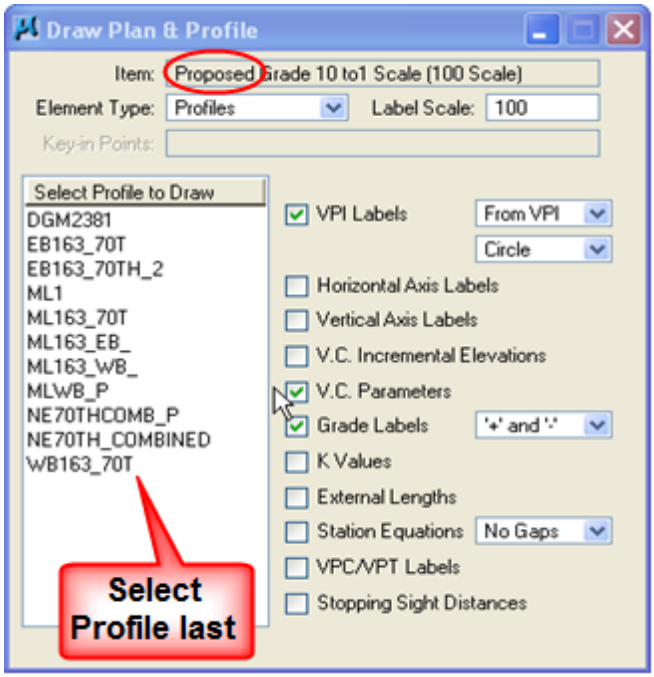


P.
Proposed Grade

In the **Draw Plan & Profile** dialog:

a. The settings for a **Proposed Grade** Profile should be similar to those shown in the image at the right.

b. After all settings have been made, move to the **Select Profile to Draw** area and *click* on the **Profile** name that you want to have drawn. The **Profile** dialog will open, as shown below.



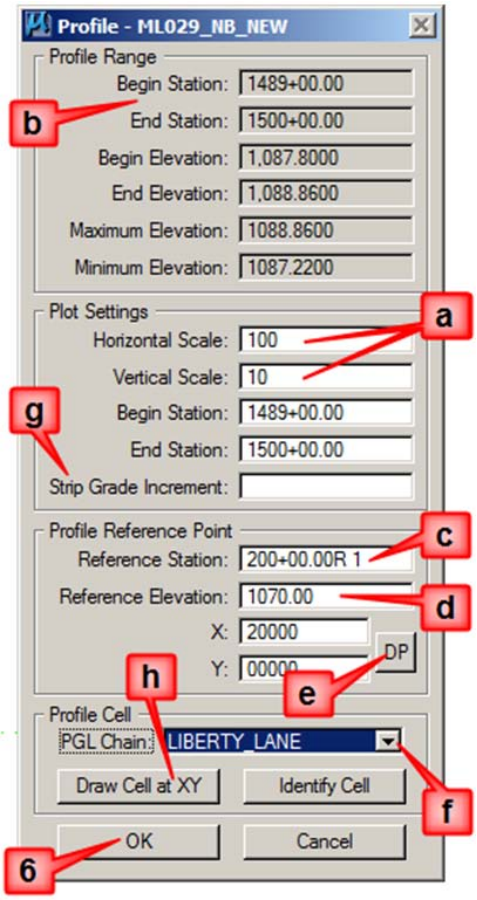
5. **Profile Dialog -**

a. In the **Profile** dialog, **Plot Settings** area, use the 10:1 scale ratio (100 Horizontal and 10 Vertical), or change it to a setting of your preference. Other scales may be used in extreme cases, but should be discussed with the automation section first.

b. The **Begin Station** and **End Station** limits should include the portion of the Profile that is to be drawn.

c. To plot the profile and give it "intelligence", a profile cell must be created. This is typically done with the placement of the existing ground profile.
The **Reference Station** is the beginning origin location of the Geopak profile cell axis. The station must be within the limits of the chain. Also, to help simplify the checking process later, the station should be set to an even +25 stationing increment.

d. The **Reference Elevation** is the elevation of the axis of the profile cell. This elevation should be lower than the lowest profile elevation and should be set to the nearest even 5 or 10 foot increment.
The beginning elevation of the Geopak profile cell should be set low enough to keep the sheeting **Profile** Port Shapes and the Tabular Data – Ditch Bar Graph (**DBG**) Port Shapes from overlapping. Placing the cell approximately 300' lower than the lowest profile elevation is a reasonable elevation choice, but this could be different for different projects and scales. "Trial and Error" and experience will help to determine the appropriate elevation to use to keep the Port Shapes close together, but not overlapping.



e. For the beginning point (origin) of the Geopak cell, *click* the **DP** button. Then, in the MicroStation file, *select* the location (place a point) where the drawing of the profile is to begin. This action will cause the "X, and Y" coordinate fields to be populated.

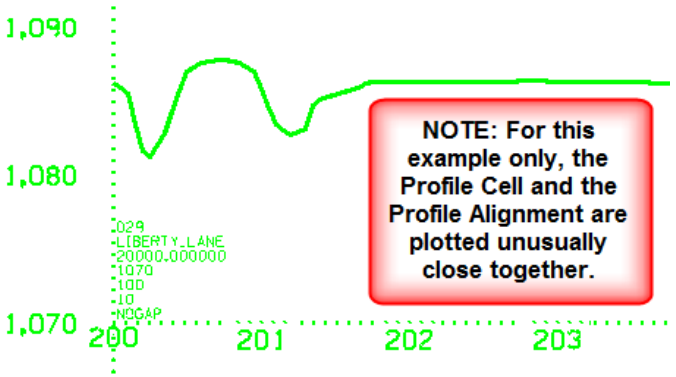
f. In the **PGL Chain** field, *click* the *drop-down* selection list arrow to select the horizontal alignment that is associated with the current **Profile**.

g. The **Strip Grade Increment** field should be left blank for the existing ground profile, and set to 25 feet for the proposed profile.

h. *Click* the **Draw Cell at XY** button and the profile cell should appear in the MicroStation file at the location that was selected with the **DP** button. The profile cell is drawn in a green color, as shown in the example below.

6. *Click* the **OK** button (shown above in the **Profile** dialog) and the Profile Alignment will be drawn on the Profile Cell, similar to that shown at the right,

7. Steps 4 through 6 should be repeated for each profile that is to be drawn. All profiles associated with the same chain can be plotted on one cell, if so desired. A separate profile cell (in a separate model) is necessary for each different horizontal alignment.



Chronology of Changes to Design Manual Section:

021A-202 COGO Profiles, Alignments

9/30/2011 Revised
Added information for Existing and Proposed profiles and replaced out-of date graphics.

9/20/2010 NEW
Documents how to draw profile alignments with Geopak