Objective

This document is intended to acquaint users with using the Sheet Manager to automatically generate and label a typical urban plan/profile sheet including utilities created using Pipes in Autodesk Civil Design. Sheet Manager is by far the most productive tool I have ever used for subdivision, highway, railroad, and channel projects.

Prerequisites

Users must be experienced using both Land Desktop and Civil Design – specifically the alignments, profiles, and pipes functions. Previous experience using the Sheet Manager is helpful.

Introduction

The Sheet Manager automates the process of creating profile, plan/profile, and cross section sheets for a project. Formatted drawings are saved as Sheet Styles that automatically annotate a variety of labels, grids, blocks, and tables on the finished sheets. These Sheet Styles, like text styles or dimension styles, are saved for use on future projects.

Using Pipes in Civil Design to label the finish draft pipes can be an exercise in frustration. In plan and profile, the pipe label placement is good but it is extremely difficult to configure a single, submittal-quality label that does not require at least some manual editing.

Efforts to use Pipes to label the finish draft nodes are met with similar results. In plan, the problem is not the placement of the node labels, it's the rotation. They are rotated to zero degrees in model space. If the plan view is rotated in the paper space viewport, the node labels are rotated with it.

Labels generated by the sheet manager are produced as a *single*, user-configured label avoiding all the pitfalls of labeling using Pipes in Civil Design. Node labels are rotated properly in the plan view and correctly placed vertically in profile.

The basic process of creating and labeling plan/profile sheets once the sheet style is created is outlined in the following table.

Generating Plan/Profile Sheets	
Step	**Explanation**
1 Design the roadway alignment and profile.	Plan and profile views must exist in your drawing in order to plot them with Sheet Manager. You can use XREFs to reference these views.
2 Set the Sheet Manager Settings.	The Settings control the sheet style database path (optional), layers, display of match lines, and so on.
3 Set the current sheet style.	The sheet style includes a border, viewports, and frames for labels.
4 Model space versus Paper space	All sheets can be generated while in paper space or in model space. Final sheets are loaded in paper space – one sheet per layout.
5 Set the current alignment.	You must set the current alignment so the correct plan information is referenced.
6 Set the current profile.	You must set the current profile so the correct profile information is referenced.
7 Lay out the sheet series.	Laying out the series places rectangles over the alignment. Each rectangle represents one sheet in the series.
8 Adjust the layout, if necessary.	If the rectangles do not cover the area of the alignment correctly, you can move or rotate them with the Edit Sheet Layout command. You can also use this command to edit the profile datum elevation of the layout so that the correct part of the profile appears on each generated sheet.
9 Generate the sheet series.	This step creates the sheet annotation and saves the sheets to the sheet series folder. Only paper space entities are actually created. The generated sheets always reference the model space entities from the drawing itself.
10 Load the sheet series.	The sheets may be loaded as individual drawings or as multiple layouts in a single drawing.

Creating a Sheet Style

The following tasks can be executed from any drawing while attached to any project but my personal preference is to create and edit my sheet style(s) while attached to a project created specifically for that purpose. Though some of the files and prototypes referenced in this exercise have been customized to match our training data sets, the process need not be altered to use the standard settings.

Create the Project and Drawing

a. Double-click on the Land Desktop icon on your desktop. The program initializes on startup. By default, the AutoCAD Land Desktop Today dialog is displayed.

b. Start a new drawing by selecting **NEW** from the My Projects section of the Today dialog. The New Drawing: Project Based dialog is displayed.

c. Select the **Create Project…** button. The Project Details dialog is displayed.

d. Select **Land Desktop** for the prototype in the Initial Settings for New Drawings section.

e. Enter **_SHEET STYLES** for the project name in the Project Information section. Remember: always include appropriate descriptions and key words for your projects.
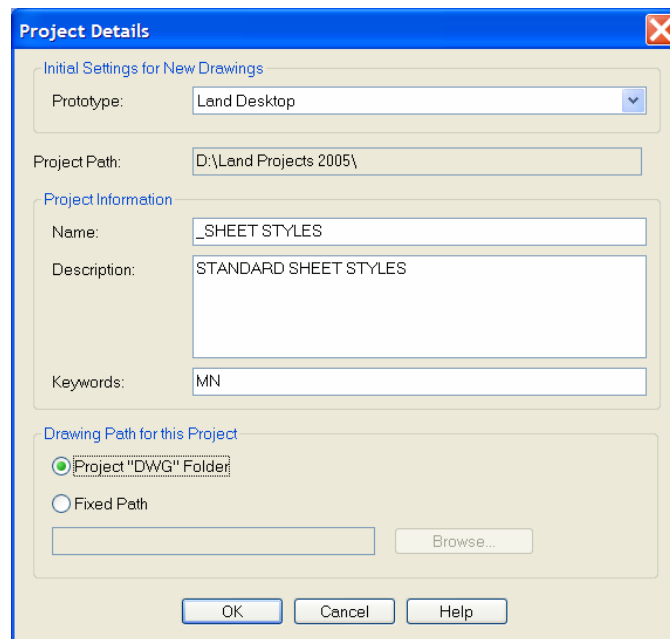
Figure 1. Project Details dialog

f. Select **OK** to return to the New Drawing: Project Based dialog.

g. Enter **BASE** for the file name.

h. Select **_standard.dwt** from the Select Drawing Template section.

i. Select **OK**. The Create Point Database dialog is displayed.
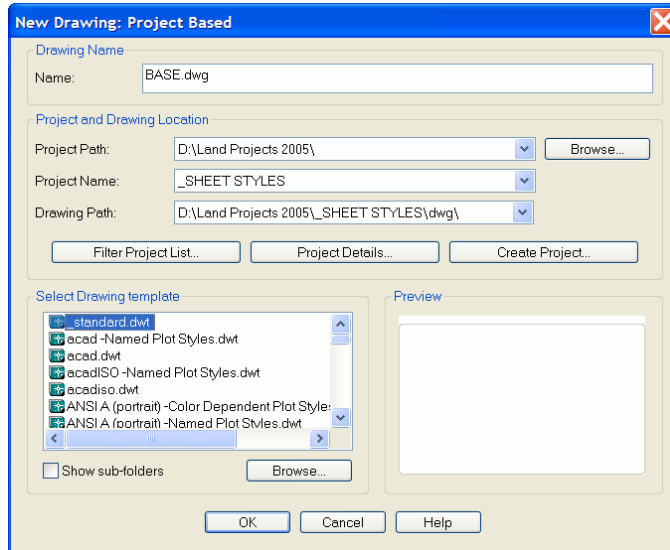
Figure 2. New Drawing: Project Based dialog

j. Select **OK** to accept the default settings for the point database.

Load the Drawing Setup

a. By default, the Load Settings dialog of the Drawing Setup Wizard is displayed. Double-click on the **i20.set (Imperial, 1"=20')** for the drawing setup profile and select **Finish**.

b. Select **OK** to dismiss the setup confirmation dialog.
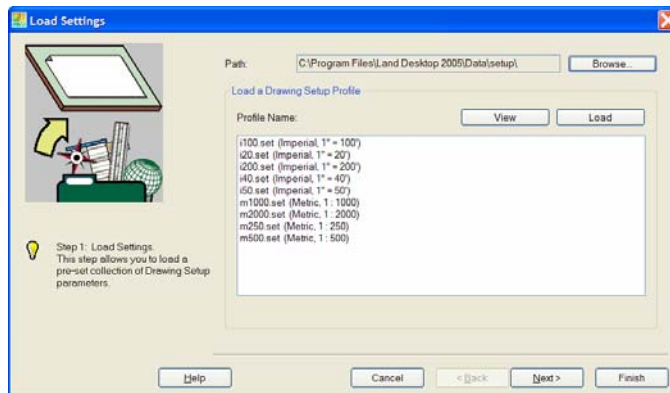
Figure 3. Drawing Setup Wizard

Select the Plotter and Sheet Size

    a.   Select the Layout1 tab, right-click and select **Page Setup**.

    b.   Select the **Plot Device** tab.

    c.   Under Plotter Configuration, select DWF6 ePlot.pc3 for the plotter name.
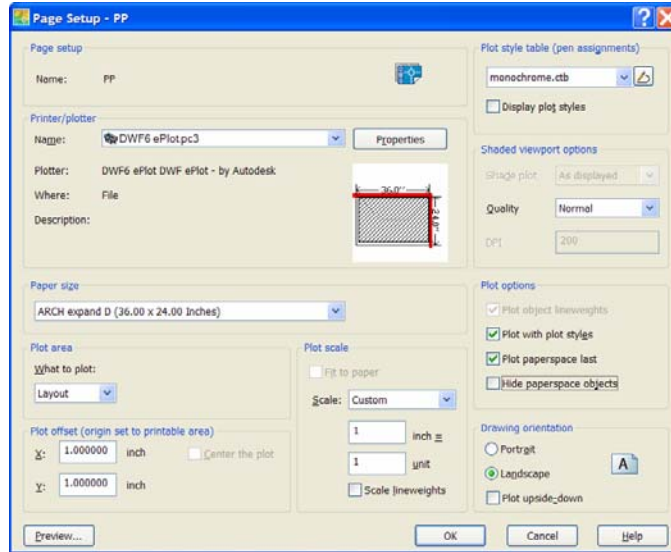

Figure 4: Page Setup Dialog - Plot Device

    d.   Under Paper Size and Paper Units, select ARCH expand D (24.00 x 36.00 Inches) for the paper size and verify that the other dialog settings are as shown. Select **OK** to return to the drawing.

Insert the Border into the Drawing

You begin the process of defining a sheet style by choosing a drawing file that contains the title block and border that you want to appear on the plotted sheets. You insert this drawing in the paperspace layout at a 1:1 scale.

    a.   Type **I** (the command alias for Insert) at the command line and press **Enter**. The Insert dialog is displayed.

    b.   Select **Browse…** and navigate to the d:/Land Projects 2005/_Sheet Styles/dwg project folder.

    c.   Double-click on **pp_border.dwg**

    d.   Toggle Off the three **Specify On-screen** boxes and toggle On the **Explode** check box. Select **OK** and **SAVE** the drawing. The plan/profile border with title block is inserted into the current drawing at 0,0.
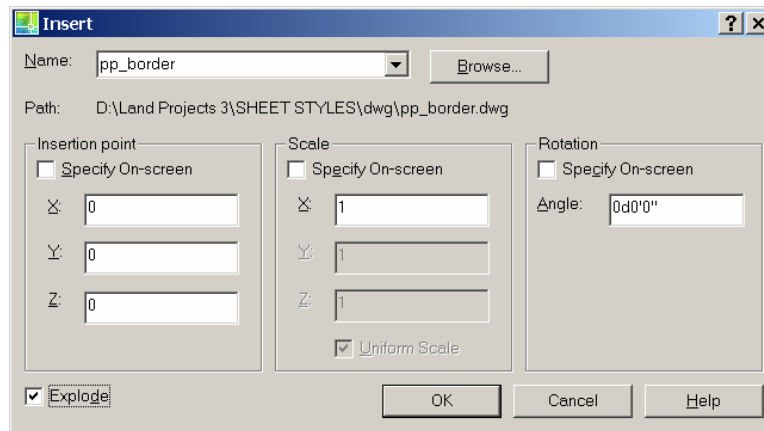

Figure 5: Insert Dialog

Sheet Manager Settings

Before defining a sheet style, you need to specify the path where it will be stored. This setting applies to all drawings in the project. The default path for sheet styles is *c:/Program Files/Land Desktop 2005/Data/Sheets/Sdsk_I* but sheet styles can be stored anywhere. You can store sheet styles in a project prototype, for example, automatically including the style(s) in each new project that is created.

The Use STYDB key defined in SDSK.DFM file option uses the STYDB path stored within the sdsk.dfm file. This text file is stored in *c:\program files\land desktop 2005* and can be edited using any text editor. Although the STYDB option was added to support multi-user environments, you can also use it for single-user systems.

Set the Path for the Sheet Styles

a. Select **Menu Palettes…** from the Projects menu. The Menu Palette Manager dialog is displayed. Double-click on Civil Design 2005.

b. Select **Settings…** on the Sheet Manager menu. The Settings dialog is displayed.

c. Select **Set…** under Style Database. The Style Database dialog is displayed.

d. Toggle off the **Use STYDB key defined in SDSK.DFM** check box. The default path to the sheet styles directory *c:\program files\land desktop 2005\data\sheets\sdsk_I* will display in the Path window. Verify that the drive is correct for the installation on your machine.

e. Select **OK** to close the Style Database Path dialog.

f. Select **OK** to close the Settings dialog.

g. **Save** the drawing.
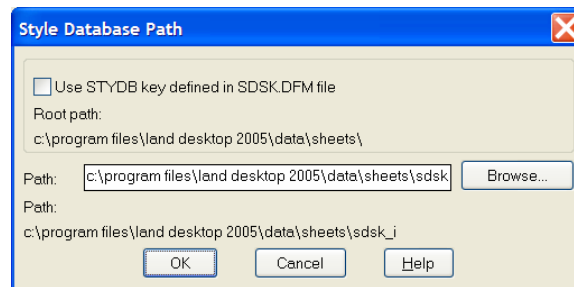
Figure 6: Style Database Path Dialog

Create the Plan and Profile Viewports

The layouts in AutoCAD 2005 are the latest incarnation of the plotting utility called paper space. Viewports are the windows from our plotted sheet in paper space to our real-world scale model in model space. They are sometimes referred to as floating viewports as they can be placed wherever you want them to appear on the plotted sheet.

For the purpose of this exercise markers have been created to indicate the locations of the plan and profile viewports and appear as in Figure 8.

a. Turn the layer **Viewport** ON and set it as the current layer. As we create the sheet style, the frame, viewport, and grid entities may overlap. Layer separation allows us to distinguish the entities.

b. Select **Create Viewport** from Sheet Styles on the Sheet Manager menu. Viewports can also be created from Viewports on the View menu or by using the MVIEW command.

c. When prompted, select the lower left and upper right corners of the plan area viewport.

d. Press **Enter** to repeat the Create Viewport command.

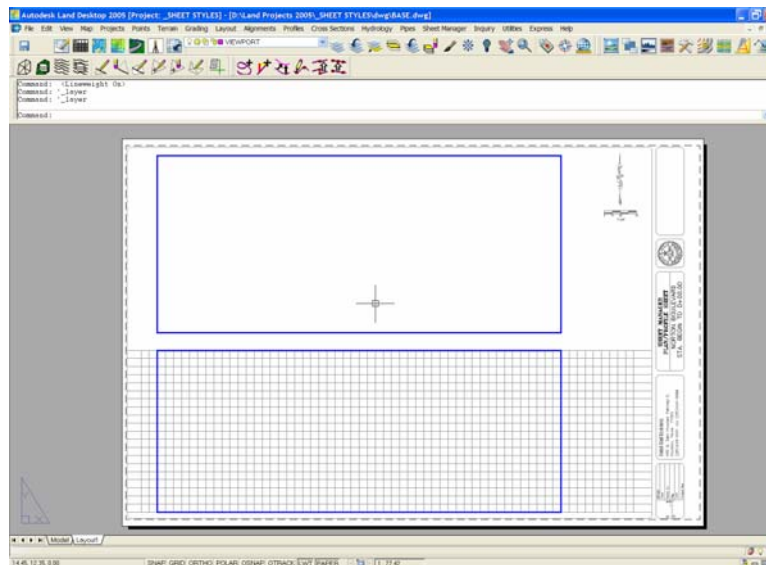e. When prompted, select the lower left and upper right corners of the profile area viewport.

Figure 7: Plan and Profile Viewport Markers

Specify the Scale for the Plan and Profile Viewports

The border sheet, placed in the layout at a 1:1 scale, is placed in inches, not decimal feet. The base unit for the model space drawing is feet. For sheet manager to work correctly, we must specify the scale of the plan and profile viewports.

    a.   Select **Set Viewport Category** from Sheet Styles on the Sheet Manager menu.

    b.   When prompted, select the viewport for the Plan area and press **Enter**. The Edit View Data dialog is displayed.

    c.   Select **Plan** for the category and enter **20** for the View Scale. Select **OK**.

    d.   Press **Enter** to repeat the command.

    e.   When prompted, select the viewport for the Profile area and press **Enter**. The Edit View Data dialog is displayed.

    f.   Select **Profile** for the category and enter **20** for the View Scale. Select **OK**.

    g.   Save the drawing.
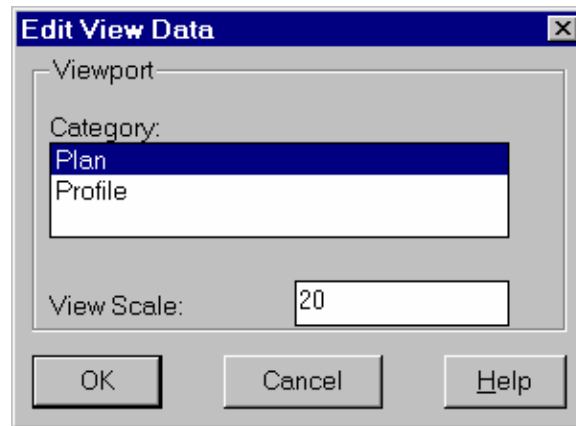
Figure 8: Edit View Data Dialog

Frames and Labels

Labels are not created directly in the Sheet Manager as we might normally label a drawing. The label properties are instead attached to a *frame* which becomes part of the sheet style definition. The label is actually generated from our design.

Creating the Plan Viewport Frame

a. Select **Create/Edit Frames** from Sheet Styles on the Sheet Manager menu.

b. You will be prompted at the command line to select a frame. Use this option to edit existing frames. Press **<Enter>** to display the **Edit Frame Data** dialog.
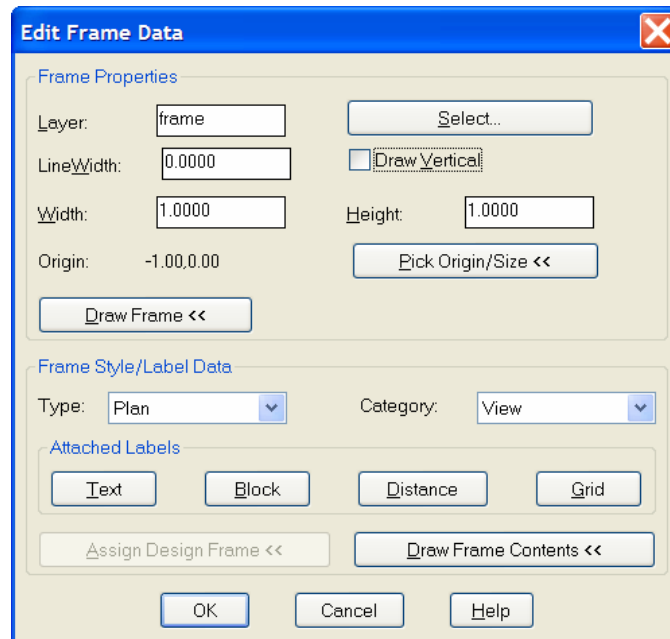
Figure 9: Edit Frame Data dialog

c. Select **Plan** as the Type under Frame Style/Label Data.

d. Select **View** as the Category under frame Style/Label Data.

e. Even though we are not through with this frame we could select **OK** to return to the drawing. The frame would be created on a layer named FRAME and could be edited at a later time to add the labels. Continue to the section **Attaching Pipe Data Labels to the Frame**.

Attaching Pipe Data Labels to the Plan Frame

a. Select the **Text** button under Attached Labels on the Edit Frame Data dialog. The Edit Attached Labels dialog is displayed. As we have yet to add labels to this frame the Currently Attached window is empty.

b. Select the **Add** button under Text Labels. The Select Style dialog is displayed. The Style List includes predefined label styles for a variety of cross section, plan, and profile labels. We will create a label style for our pipe labels and use a format similar that employed for the other styles.

Figure 10: Select Style dialog

c. Type **Plan: Pipe Data** for the Style Name and select the Edit button. The Text Label Properties dialog is displayed. Remember: we're only configuring the pipe labels at the moment. The node labels will be configured separately.
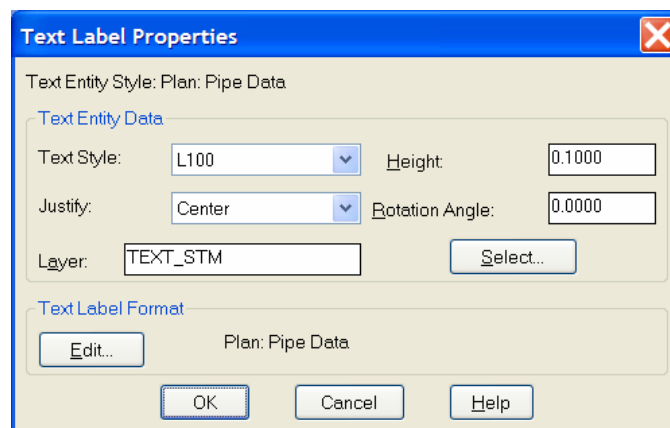
Figure 11: Text Label Properties dialog

d. Select **L100** as the Text Style.

e. Select **Center** as the text justification. In plan view the label will be placed above the pipe – not in the middle as in profile.

f. Confirm **0.1000** is the Height. This is the paper space text height.

g. Type **TEXT_STM** for the layer name. If the layer does not exist it will be created for you.

h. Accept the default zero degree rotation angle. The final label will be aligned with our design later in the exercise. Select the **Edit** button to display the Text Label Format dialog. We want the finished label to appear as in the following example:

<p align="center">PROP. 100 LF~30" RCP.</p>

i. Type **PROP.** in the Text Data box and select the Add button to add it to the Text/Code/Formula Format Order window. Make sure to include a space after the period to separate it from the pipe length.

j. Select **Pipe Length (2D)** from the Codes list and select the Add Code to Text Format button to add it to the Text/Code/Formula Format Order window.

k. Type **LF~** in Text Data and select the Add button to add it to the Text/Code/Formula Format Order window. Make sure to add a space before LF to separate it from the pipe length.

l. Select **Pipe Diameter** from the Codes list and select the Add Code to Formula button to add the coded formula to the Formula window. We will convert the Pipe Diameter code units from decimal feet to inches by adding ***12** to the code. The formula must then be enclosed in parenthesis and will appear as **([200|1912]*12)**.

m. Select the **Add** button to add the modified pipe diameter code to the Text/Code/Formula Format Order window.

n. Type **" RCP** in the Text Data box and select the Add button to add it to the Text/Code/Formula Format Order window. The dialog should appear as in Figure 12.

<p align="center">Figure 12: Edit Text Format dialog</p>

o. Before we accept the label format we must set the display precision. Select **Pipe Run Data|Pipe Length (2D)** in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed.

p. Type **0** for Decimal Precision: and select OK to return to the Edit Text Format dialog.

q. Select **(Pipe Run Data|Pipe Diameter*12)** in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed.

r. Type **0** for Decimal Precision: and select OK to return to the Edit Text Format dialog.

s. Select **OK** to exit the Edit Text Format dialog.

t. Select **OK** to exit the Text Label Properties dialog. The Edit Attached Text Labels dialog is displayed.

u. Select **Design Aligned** for the label location. This is the setting that will rotate our label to parallel the pipe in plan view.

v. Select **0.2** for the Vertical Label Offset. This value offsets the label text justification point 0.2 inches vertically from its position in the frame. When selecting this value keep in mind the text justification you selected on the Text Label Properties dialog.
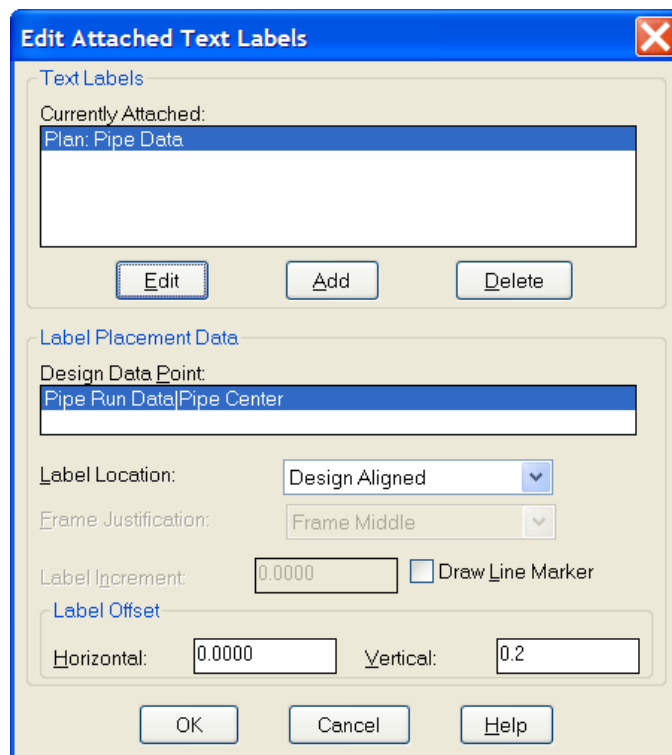
Figure 13: Completed Edit Attached Text Labels dialog

w. Select **OK** to return to the Edit Frame dialog and **OK** to return to the drawing. The frame will be created on a layer named FRAME.

Attaching Pipe Node Data Labels to the Plan Frame

a. Select **Create/Edit Frames** from Sheet Styles on the Sheet Manager menu. You will be prompted at the command line to select a frame. Select the plan view frame created in the previous exercise.

b. Select the **Text** button under Attached Labels on the Edit Frame Data dialog. The Edit Attached Labels dialog is displayed. As we have yet to add labels to this frame the Currently Attached window is empty.

c. Select the **Add** button under Text Labels. The Select Style dialog is displayed. We will create a label style for our pipe node labels and use a format similar that employed for the other styles.
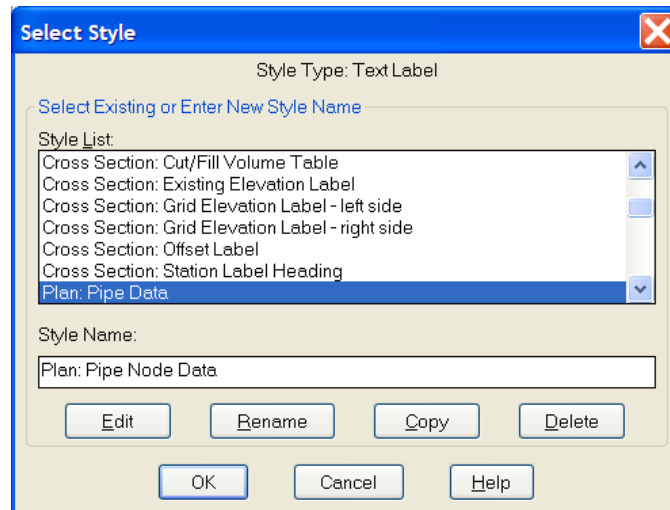
Figure 14: Select Style dialog

d. Type **Plan: Pipe Node Data** for the Style Name and select the Edit button. The Text Label Properties dialog is displayed.
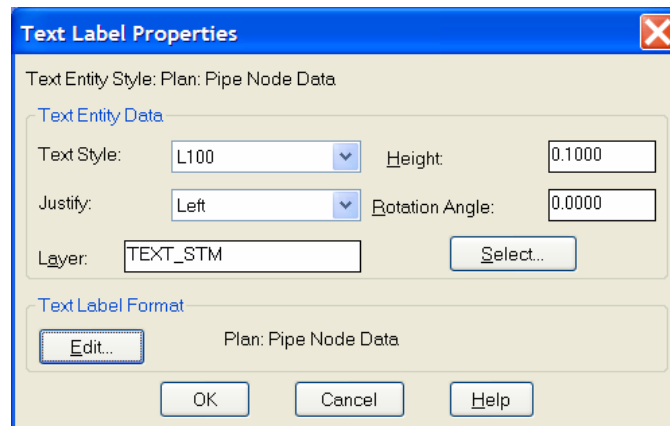
Figure 15: Text Label Properties dialog

e. Select **L100** as the Text Style.

f. Select **Left** as the text justification. In plan view the label will be placed above the pipe – not in the middle as in profile.

g. Confirm **0.1000** is the Height. This is the paper space text height.

h. Type **TEXT_STM** for the layer name. If the layer does not exist it will be created for you.

i. Accept the default zero degree rotation angle. The final label will be aligned with our design later in the exercise. Select the **Edit** button to display the Text Label Format dialog. We want the finished label to appear as in the following example:

PROP. STM MH
STA. 1+00.00; 35.5'
RIM=100.00

j. Type **{PROP.** in the Text Data box and select the Add button to add it to the Text/Code/Formula Format Order window. Labels and codes enclosed by brackets will be grouped on a single line. Make sure to include a space after the period to separate it from the node label.

k. Select **Node Label** from the Codes list and select the Add Code to Text Format button to add it to the Text/Code/Formula Format Order window.

l. Type **}\P{STA:** in the Text Data box and select the Add button to add it to the Text/Code/Formula Format Order window. Notice the opening/closing brackets. The **\P** indicates a new line of text will be added to the label. Make sure to add a space at the end to separate the word STA: from the actual station number.

m. Select **Node Sta** from the Codes list and select the Add Code to Text Format button to add it to the Text/Code/Formula Format Order window. The station format will be specified later in the exercise.

n. Type **;** in the Text Data box and select the Add button to add it to the Text/Code/Formula Format Order window. Make sure you add a space after the semi-colon to separate it from the offset distance.

o. Select **Node Offset** from the Codes list and select the Add Code to Text Format button to add it to the Text/Code/Formula Format Order window.

p. Type **'}\P{RIM =** in the Text Data box and select the Add button to add it to the Text/Code/Formula Format Order window. Again, notice the opening/closing brackets and the **\P** to indicate a new line of text.

q. Select **Node Rim Elev** from the Codes list and select the Add Code to Text Format button to add it to the Text/Code/Formula Format Order window.

r. Type **}** in the Text Data box and select the Add button to add it to the Text/Code/Formula Format Order window. This is the final closing bracket.

s. The dialog should appear as in Figure 16.
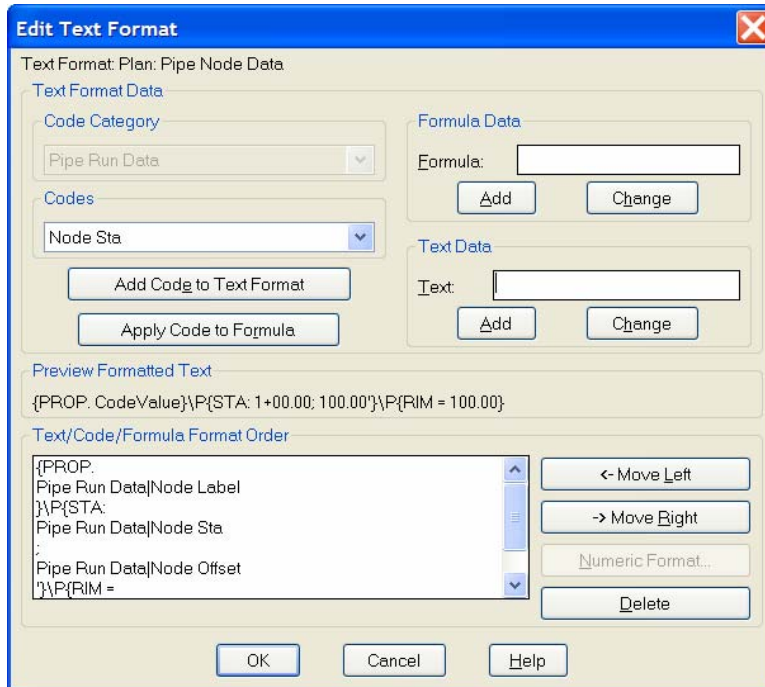
Figure 16: Edit Text Format dialog

t.   Again we must set the display precision. Select **Pipe Run Data|Sta** in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed.

u.   Type **2** for Decimal Precision: and toggle ON **Use Station Format** under Station/Chainage Numeric Format.

v.   Select OK to return to the Edit Text Format dialog.

w.   Select **Pipe Run Data|Node Offset** in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed.

x.   Type **2** for Decimal Precision: and select OK to return to the Edit Text Format dialog.

y.   Select **Pipe Run Data|Node Rim Elev** in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed.

z.   Type **2** for Decimal Precision: and select OK to return to the Edit Text Format dialog.

aa. Select **OK** to exit the Edit Text Format dialog.

bb. Select **OK** to exit the Text Label Properties dialog. The Edit Attached Text Labels dialog is displayed.

cc. Select **Design** for the label location. This setting will rotate our node label at the actual design location in the plan view.

dd. Select **0.5** for the Horizontal Label Offset. This value offsets the label text justification point 0.5 inches horizontally from its position in the frame.

ee. Select **1.0** for the Vertical Label Offset. This value offsets the label text justification point 1.0 inches vertically from its position in the frame. The Edit Attached Text labels dialog should appear as in Figure 17.
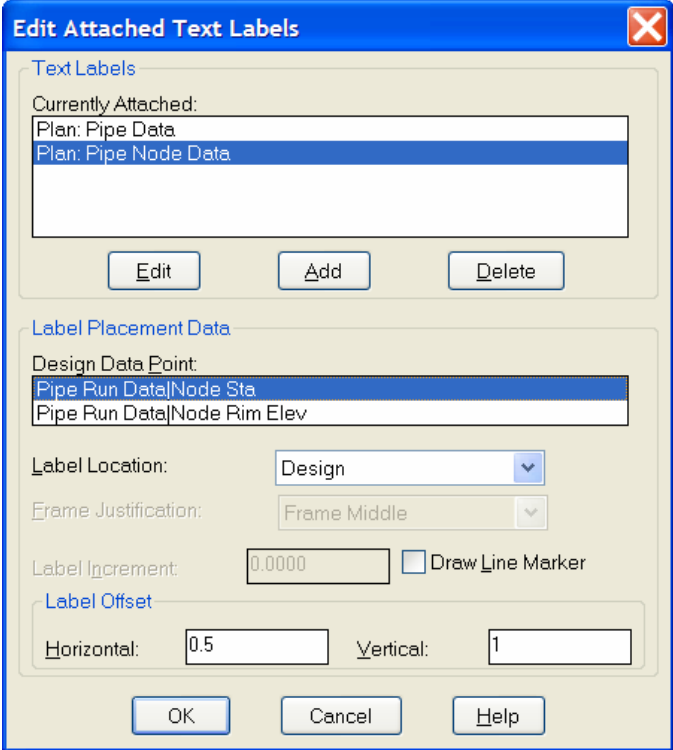
Figure 17: Completed Edit Attached Text Labels dialog

ff.   Select **OK** to return to the Edit Frame dialog and **OK** to return to the drawing.

Creating the Profile Viewport Frame

f. Select **Create/Edit Frames** from Sheet Styles on the Sheet Manager menu.

g. You will be prompted at the command line to select a frame. Use this option to edit existing frames. Press **<Enter>** to display the **Edit Frame Data** dialog.
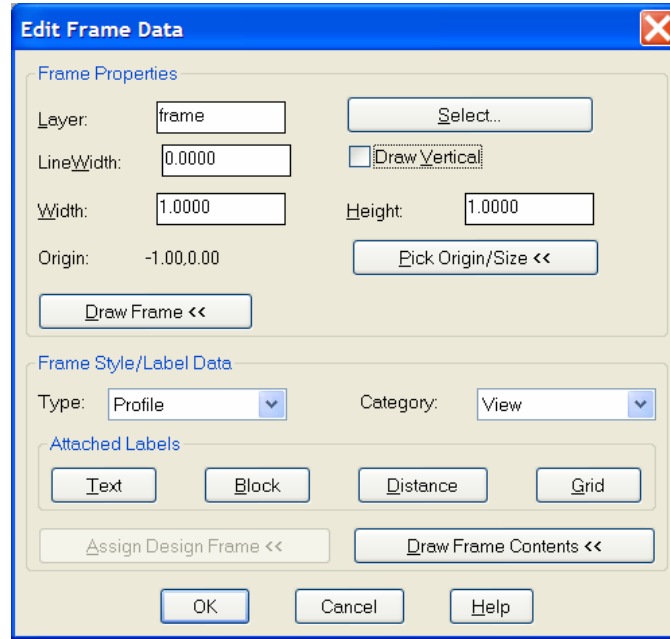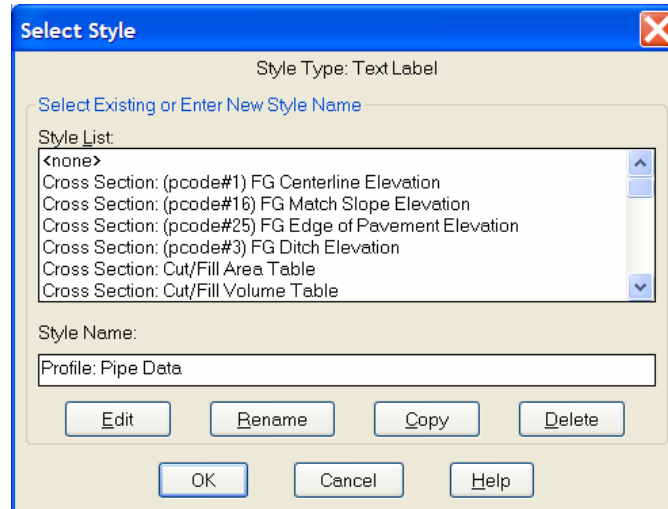
Figure 18: Edit Frame Data dialog

h. Select **Profile** as the Type under Frame Style/Label Data.

i. Select **View** as the Category under frame Style/Label Data.

j. Even though we are not through with this frame we could select **OK** to return to the drawing. The frame would be created on a layer named FRAME and could be edited at a later time to add the labels. Continue to the section **Attaching Pipe Data Labels to the Frame**.

Attaching Pipe Data Labels to the Profile Frame

a. Select the **Text** button under Attached Labels on the Edit Frame Data dialog. The Edit Attached Labels dialog is displayed. As we have yet to add labels to this frame the Currently Attached window is empty.

b. Select the **Add** button under Text Labels. The Select Style dialog is displayed. The Style List includes predefined label styles for a variety of cross section, plan, and profile labels. We will create a label style for our pipe labels and use a format similar that employed for the other styles.

Figure 19: Select Style dialog

c. Type **Profile: Pipe Data** for the Style Name and select the Edit button. The Text Label Properties dialog is displayed. Remember: we're only configuring the pipe labels at the moment. The node labels will be configured separately.
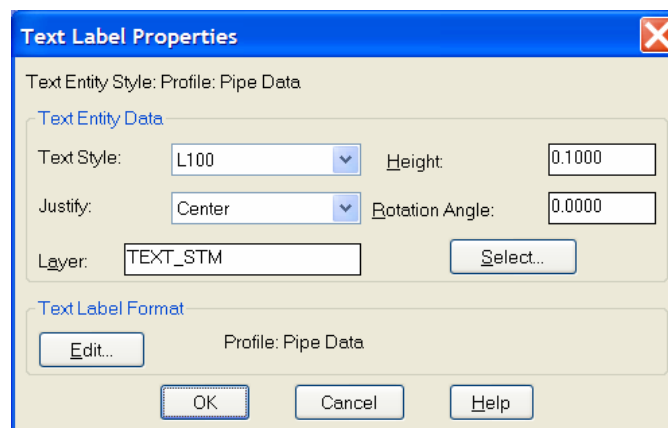
Figure 20: Text Label Properties dialog

d. Select **L100** as the Text Style.

e.   Select **Center** as the text justification. In profile view the label will be placed in the middle of the pipe.

f.   Confirm **0.1000** is the Height. This is the paper space text height.

g.   Type **TEXT_STM** for the layer name. If the layer does not exist it will be created for you.

h.   Accept the default zero degree rotation angle. The final label will be aligned with our design later in the exercise. Select the **Edit** button to display the Text Label Format dialog. We want the finished label to appear as in the following example:

<p align="center">**PROP. 100 LF~30" RCP @ 0.20%**.</p>

i.   Type **PROP.** in the Text Data box and select the Add button to add it to the Text/Code/Formula Format Order window. Make sure to include a space after the period to separate it from the pipe length.

j.   Select **Pipe Length (2D)** from the Codes list and select the Add Code to Text Format button to add it to the Text/Code/Formula Format Order window.

k.   Type **LF~** in Text Data and select the Add button to add it to the Text/Code/Formula Format Order window. Make sure to add a space before LF to separate it from the pipe length.

l.   Select **Pipe Diameter** from the Codes list and select the Add Code to Formula button to add the coded formula to the Formula window. We will convert the Pipe Diameter code units from decimal feet to inches by adding ***12** to the code. The formula must then be enclosed in parenthesis and will appear as **([200|1912]*12)**.

m.   Select the **Add** button to add the modified pipe diameter code to the Text/Code/Formula Format Order window.

n.   Type **" RCP** in the Text Data box and select the Add button to add it to the Text/Code/Formula Format Order window.

o.   Select **Pipe Slope** from the Codes list and select the Add Code to Formula button to add the coded formula to the Formula window. We will convert the Pipe Slope code precision from ft/ft to percent by adding ***100** to the code. The formula must then be enclosed in parenthesis and will appear as **([200|1913]*100)**.

p.   Select the **Add** button to add the modified pipe slope code to the Text/Code/Formula Format Order window. The dialog should appear as in Figure 21.
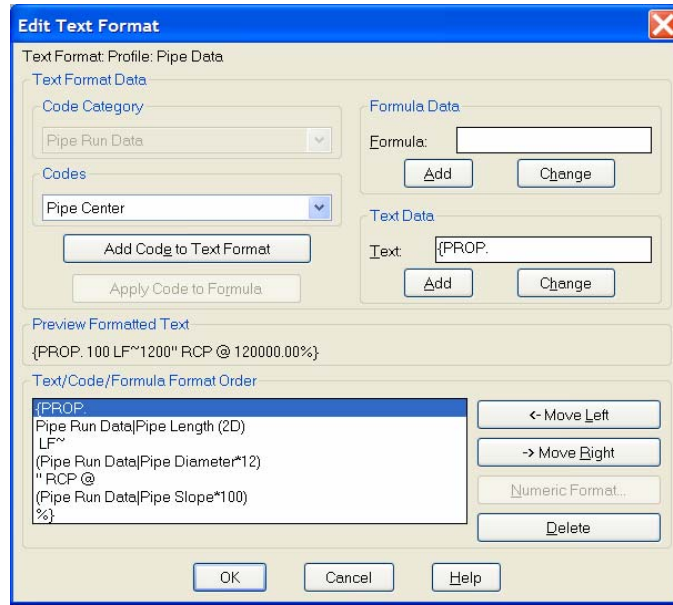
Figure 21: Edit Text Format dialog

q. Before we accept the label format we must set the display precision. Select **Pipe Run Data|Pipe Length (2D)** in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed.

r. Type **0** for Decimal Precision: and select OK to return to the Edit Text Format dialog.

s. Select **(Pipe Run Data|Pipe Diameter*12)** in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed.

t. Select **(Pipe Run Data|Pipe Slope*100)** in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed

u. Type **2** for Decimal Precision: and select OK to return to the Edit Text Format dialog.

v. Select **OK** to exit the Edit Text Format dialog.

w. Select **OK** to exit the Text Label Properties dialog. The Edit Attached Text Labels dialog is displayed.

x. Select **Design Aligned** for the label location. This is the setting that will rotate our label to parallel the pipe in plan view.

y. Select **-0.6** for the Vertical Label Offset. This value offsets the label text justification point 0.6 inches vertically from its position in the frame
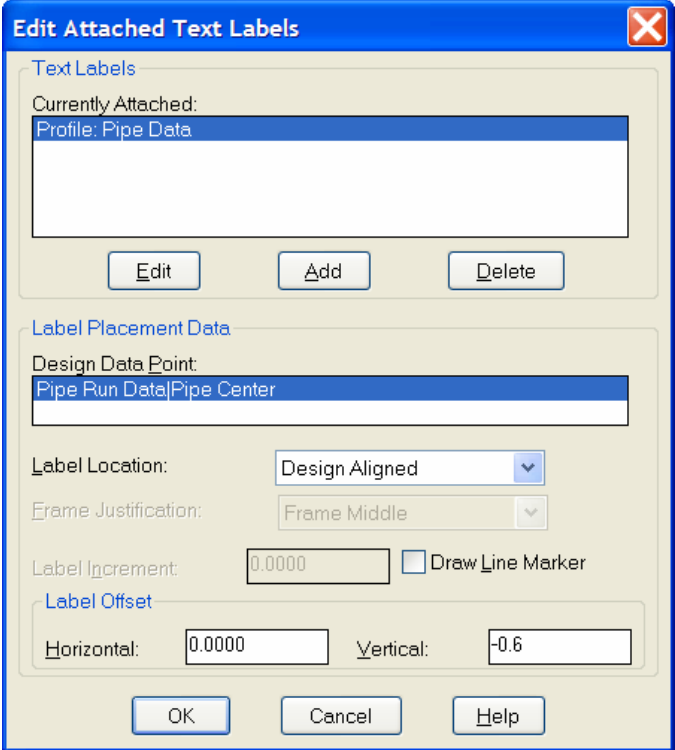
Figure 22: Completed Edit Attached Text Labels dialog

z. Select **OK** to return to the Edit Frame dialog and **OK** to return to the drawing. The frame will be created on a layer named FRAME.

Attaching Pipe Node Data Labels to the Profile Frame

a. Select **Create/Edit Frames** from Sheet Styles on the Sheet Manager menu. You will be prompted at the command line to select a frame. Select the pprofile view frame created in the previous exercise.

b. Select the **Text** button under Attached Labels on the Edit Frame Data dialog. The Edit Attached Labels dialog is displayed. As we have yet to add labels to this frame the Currently Attached window is empty.

c. Select the **Add** button under Text Labels. The Select Style dialog is displayed. We will create a label style for our pipe node labels and use a format similar that employed for the other styles.
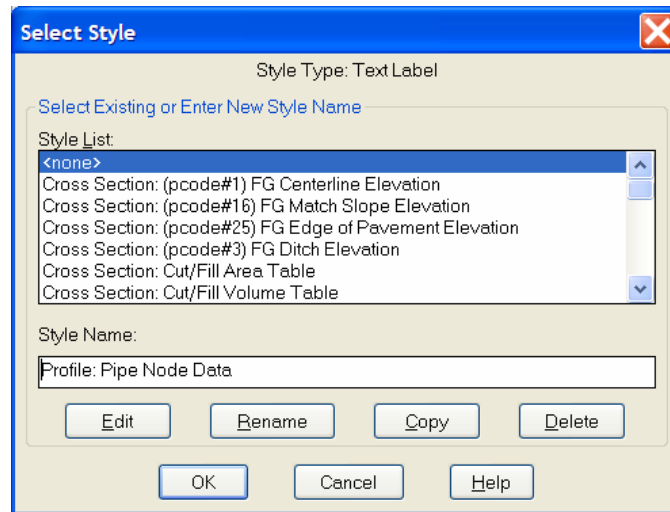
Figure 23: Select Style dialog

d. Type **Profile: Pipe Node Data** for the Style Name and select the Edit button. The Text Label Properties dialog is displayed.
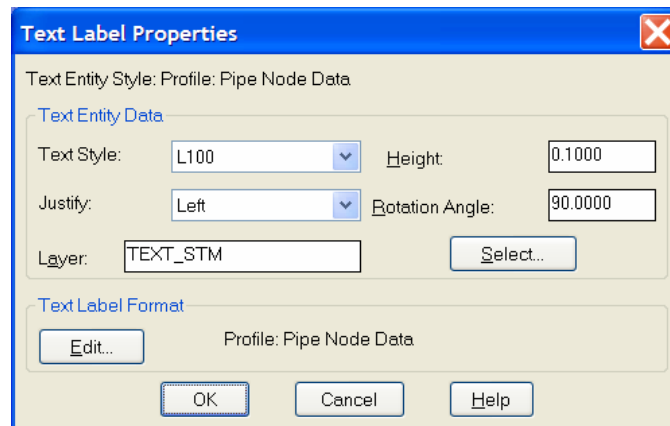
Figure 24: Text Label Properties dialog

e.   Select **L100** as the Text Style.

f.   Select **Left** as the text justification. In plan view the label will be placed above the pipe –
not in the middle as in profile.

g.   Confirm **0.1000** is the Height. This is the paper space text height.

h.   Type **TEXT_STM** for the layer name. If the layer does not exist it will be created for
you.

i.   Accept the default 90 degree rotation angle. Select the **Edit** button to display the Text
Label Format dialog. We want the finished label to appear as in the following example:

PROP. STM MH
STA. 1+00.00; 35.5'
FL (IN)=100.00
FL (OUT)=99.00

j.   Type **{PROP.** in the Text Data box and select the Add button to add it to the
Text/Code/Formula Format Order window. Labels and codes enclosed by brackets will
be grouped on a single line. Make sure to include a space after the period to separate it
from the node label.

k.   Select **Node Label** from the Codes list and select the Add Code to Text Format button to
add it to the Text/Code/Formula Format Order window.

l.   Type **}\P{STA:** in the Text Data box and select the Add button to add it to the
Text/Code/Formula Format Order window. Notice the opening/closing brackets. The **\P**
indicates a new line of text will be added to the label. Make sure to add a space at the end
to separate the word STA: from the actual station number.

m.   Select **Node Sta** from the Codes list and select the Add Code to Text Format button to
add it to the Text/Code/Formula Format Order window. The station format will be
specified later in the exercise.

n.   Type **;** in the Text Data box and select the Add button to add it to the Text/Code/Formula
Format Order window. Make sure you add a space after the semi-colon to separate it
from the offset distance.

o.   Select **Node Offset** from the Codes list and select the Add Code to Text Format button to
add it to the Text/Code/Formula Format Order window.

p.   Type **'}\P{FL (IN) =** in the Text Data box and select the Add button to add it to the
Text/Code/Formula Format Order window. Again, notice the opening/closing brackets
and the **\P** to indicate a new line of text.

q.   Type **'}\P{FL (OUT) =** in the Text Data box and select the Add button to add it to the
Text/Code/Formula Format Order window.

r.   Type **}** in the Text Data box and select the Add button to add it to the Text/Code/Formula
Format Order window. This is the final closing bracket.

s.   The dialog should appear as in Figure 25.
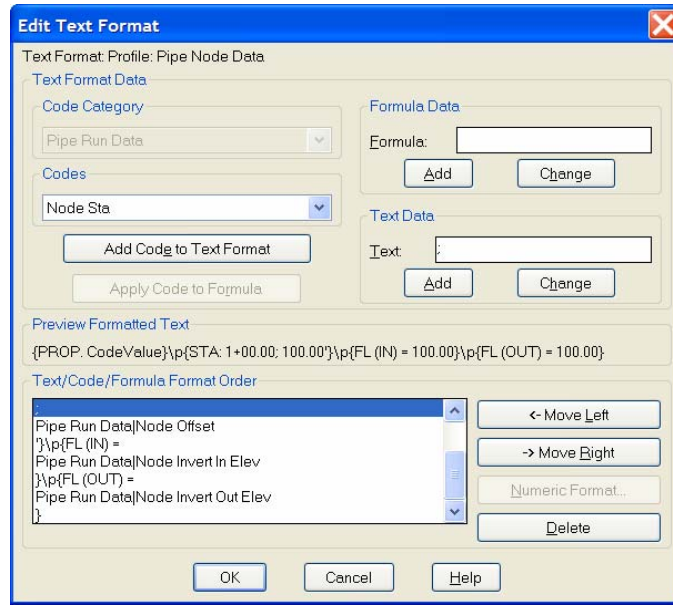
Figure 25: Edit Text Format dialog

t. Again we must set the display precision. Select **Pipe Run Data|Sta** in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed.

u. Type **2** for Decimal Precision: and toggle ON **Use Station Format** under Station/Chainage Numeric Format.

v. Select OK to return to the Edit Text Format dialog.

w. Select **Pipe Run Data|Node Offset** in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed.

x. Type **2** for Decimal Precision: and select OK to return to the Edit Text Format dialog.

y. Select **Pipe Run Data|Node Invert In Elev** in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed.

z. Type **2** for Decimal Precision: and select OK to return to the Edit Text Format dialog.

aa. Select **Pipe Run Data|Node Invert Out Elev** in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed.

bb. Type **2** for Decimal Precision: and select OK to return to the Edit Text Format dialog.

cc. Select **OK** to exit the Edit Text Format dialog.

dd. Select **OK** to exit the Text Label Properties dialog. The Edit Attached Text Labels dialog is displayed.

ee. Select **Design** for the label location. This setting will rotate our node label at the actual design location in the plan view.

ff. Select **0.36** for the Horizontal Label Offset. This value offsets the label text justification point 0.36 inches horizontally from its position in the frame.

gg. Select **0.55** for the Vertical Label Offset. This value offsets the label text justification point 0.55 inches vertically from its position in the frame. The Edit Attached Text labels dialog should appear as in Figure 26.
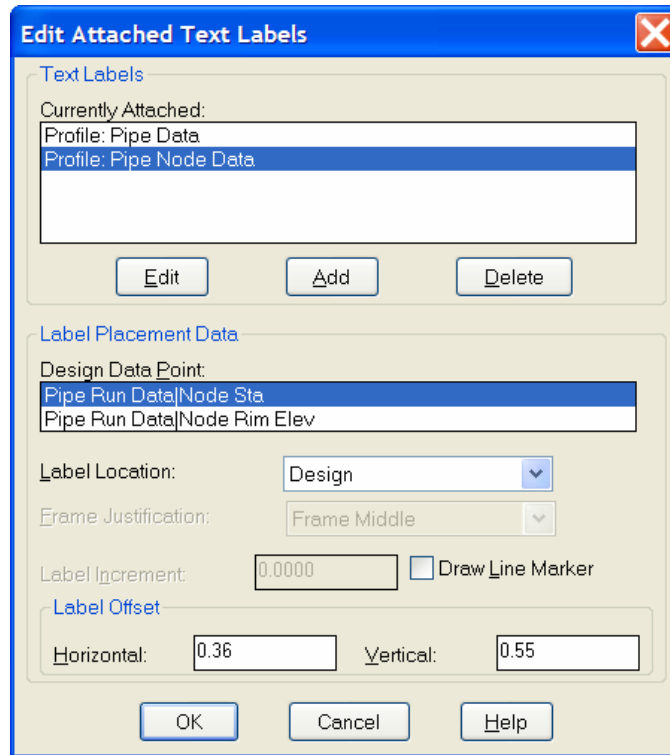
Figure 26: Completed Edit Attached Text Labels dialog

hh. Select **OK** to return to the Edit Frame dialog and **OK** to return to the drawing.

4. Profile Frames and Labels

The Profile Vertical Grid Elevation Labels display profile elevations on both sides of the profile viewport on the plotted sheets. These labels will be attached to a *frame* created using tools from the Sheet Manager menu.

Create the Profile Vertical Grid Elevation Label Frames

a. Restore the layer state **MARKER PROF ELEVATIONS** and select **OK** to return to the drawing. This layer state isolates a layer marking the locations of the Profile Vertical Grid Elevation Label frames.

b. Select **Create/Edit Frame** from Sheet Styles on the Sheet Manager menu. You will be prompted to select a frame for editing or to press Enter to create a new frame. Press **Enter**. The Edit Frame Data dialog is displayed.

c. Select **Pick Origin/Size<<** in the Frame Properties section of the dialog.

d. Use the Endpoint object snap to select the lower left and upper right corners of the rectangle to be located left of the profile viewport.

e. Toggle ON the **Draw Vertical** check box in the Frame Properties section of the dialog. **THIS IS IMPORTANT!** Without it the elevation labels will not appear.

f. Select **Profile** for the Type and **Label** for the Category in the Frame Style/Label Data section of the dialog. Do not exit this dialog yet. The labels must still be attached to the frame.
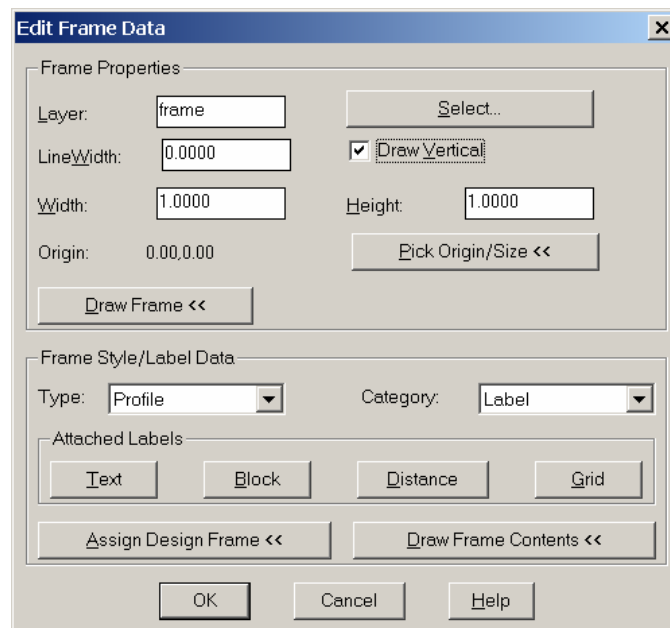
Figure 27: Edit Frame Data dialog

Attach and Configure the Labels for the Grid Elevations

a. Select the **Text** button on the Attached Labels section of the Edit Frame Data dialog. (See previous page) The Edit Attached Labels dialog is displayed.
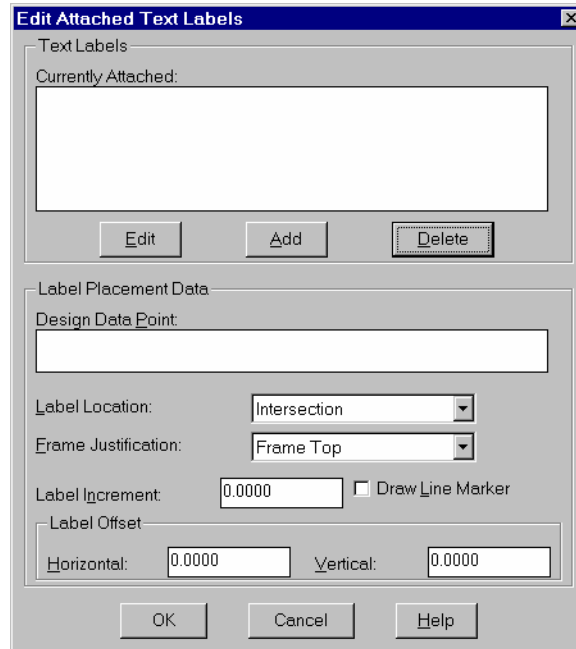
Figure 28: Edit Attached Text Labels dialog

b. Select the **Add** button in the Text Labels section of the dialog. The Select Style dialog is displayed.
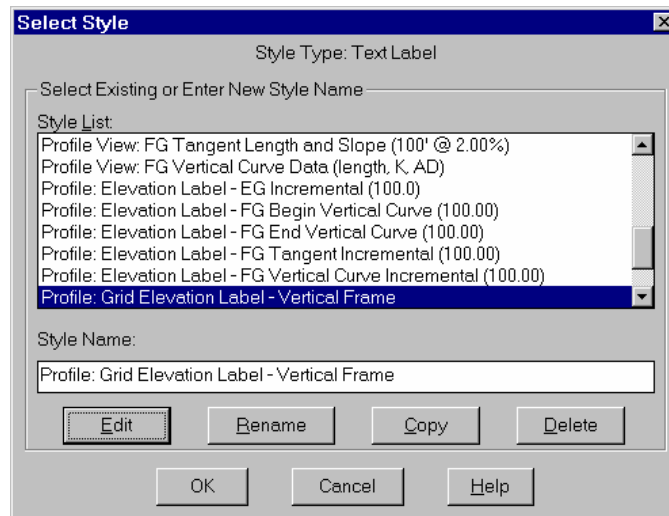
Figure 29: Select style dialog

c. Select **Profile: Grid Elevation Label – Vertical Frame**.

d. Select the **Edit** button. The Text Label Properties dialog is displayed.
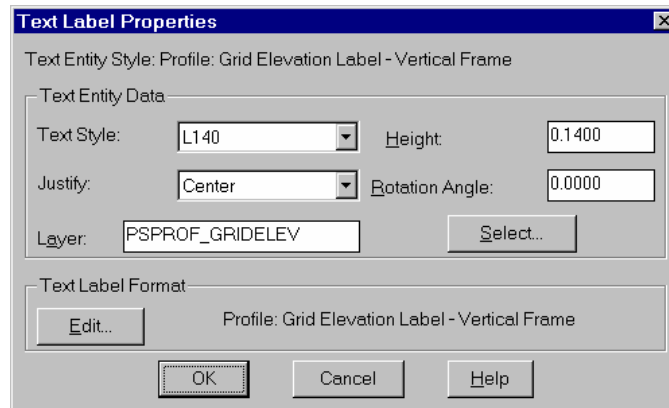
Figure 30: Text Label Properties dialog

e. Select **L140** for the Text Style for labeling the profile elevations.

f. Enter **0.14** for Height.

   WARNING! When you select a text style with a predetermined height, such as L140, this value defaults to that height *times* the horizontal scale of the drawing. The text height must be set to the desired plotted height in the layout.

g. Select **Center** for Justify in the Text Entity Data section of the Text Label Properties dialog. Keep this text justification point in mind for future reference. It will become important later when setting values for the frame justification and label offsets.

h. In this exercise, use the default layer for this label. In production, enter the layer your office considers standard for labeling profile elevations. The program will create the layer specified if it does not exist.

i. To edit the numeric format of our label, select **Edit…** from the Text Label Format section of the Text Label Properties dialog. The Edit Text Format dialog is displayed.
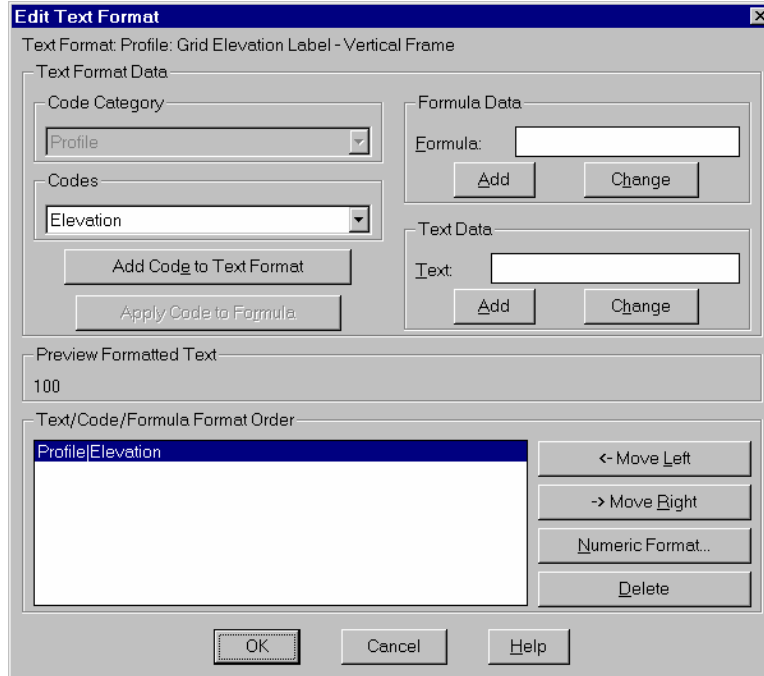
Figure 31: Edit Text Format dialog

j. Select the **Numeric Format…** button from the Text/Code/Formula Format Order section
    of the Edit Text Format dialog. The Edit Numeric Format dialog is displayed.
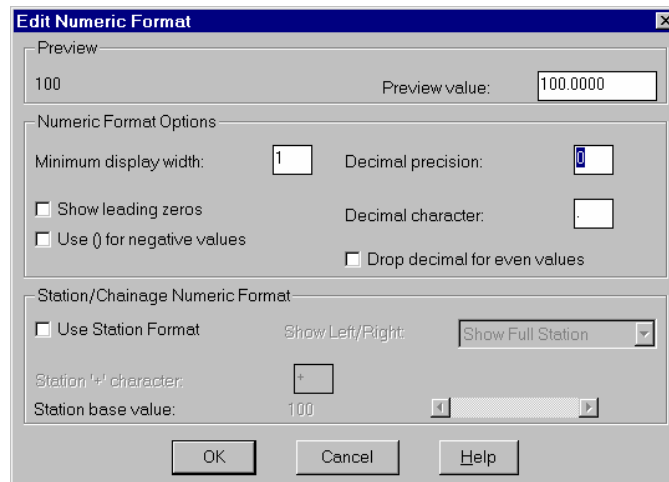
Figure 32: Edit Numeric Format dialog

k. Enter **0** in the Decimal Precision box in the Numeric Format Options section of the Edit
    Numeric Format dialog.

l. Select **OK** to exit the Edit Numeric Format dialog.

m. Select **OK** to exit the Edit Text Format dialog.

n. Select **OK** to exit the Text Label Properties dialog.

o. Select **OK** to exit the Select Style dialog. This returns you to the Edit Attached Text Labels dialog.
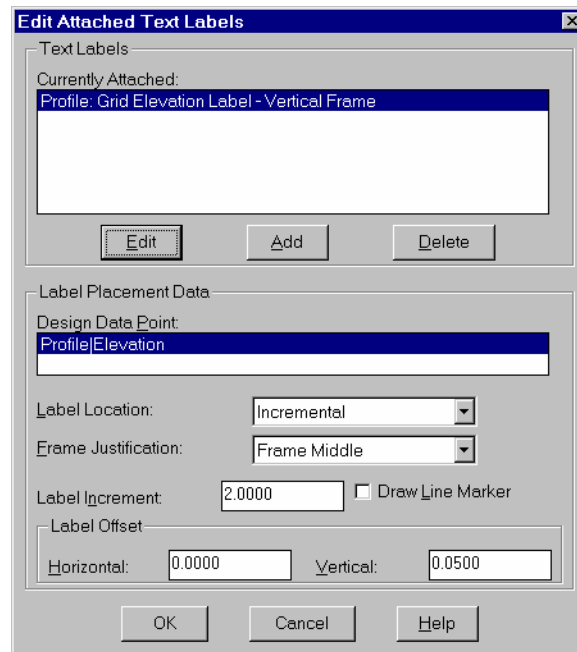
Figure 33: Edit Attached Text Labels dialog

p. Select **Incremental** in the Label Location window.

q. Select **Frame Middle** in the Frame Justification window.

r. Enter **2** for the Label Increment. This will place an elevation label on every second horizontal grid line.

s. Enter **0.05** for the Vertical offset. This will offset the elevation label 0.05 inches from the horizontal grid line.

t. Select **OK** to exit the Edit Attached Text Labels dialog.

u. Select **OK** to return to the drawing.

v. Right-click in the drawing area to repeat the **Create/Edit Frame** command.

w. Repeat the steps in Exercise 4 to create and attach labels to the Vertical Grid Label frame located on the right side of the profile.

x. **Save** the drawing.

5. Create the Profile Center Line Station Labels

Now we need to create the frame and attach the Profile Center Line Station Labels. In our exercise, this frame will be located below the profile viewport.

a. Restore the layer state **MARKER PROF STATIONS** and return to the drawing. This layer state isolates a layer marking the locations of the Profile Center Line Station label frames.

b. Select **Create/Edit Frame** from Sheet Styles on the Sheet Manager menu. You will be prompted to select a frame for editing or to press Enter to create a new frame. Press **Enter**. The Edit Frame Data dialog is displayed.

c. Select **Pick Origin/Size<<** in the Frame Properties section of the dialog.

d. Use the Endpoint object snap to select the lower left and upper right corners of the rectangle located below the profile viewport.

e. Select **Profile** for the Type and **Label** for the Category in the Frame Style/Label Data section of the dialog. Do not exit this dialog yet. The labels must still be attached to the frame.
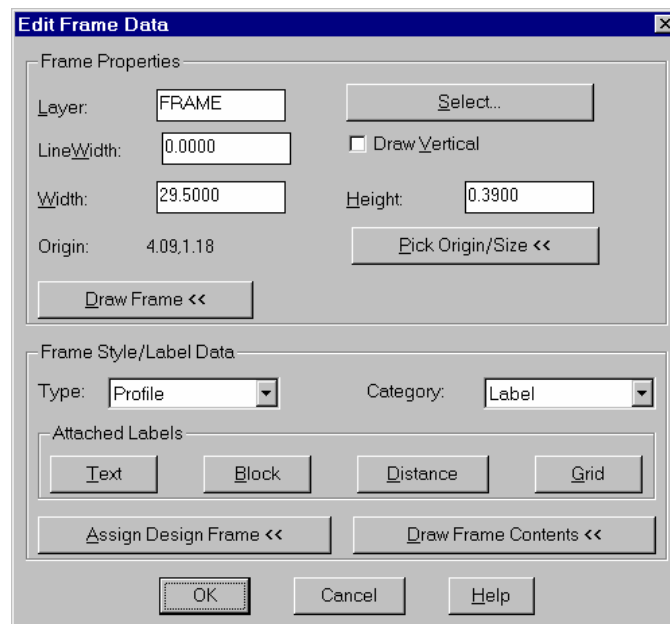
Figure 34: Edit Frame Data dialog

Attach and Configure the Profile Station Labels

a. Select the **Text** button on the Attached Labels section of the Edit Frame Data dialog. (See previous page) The Edit Attached Labels dialog is displayed.
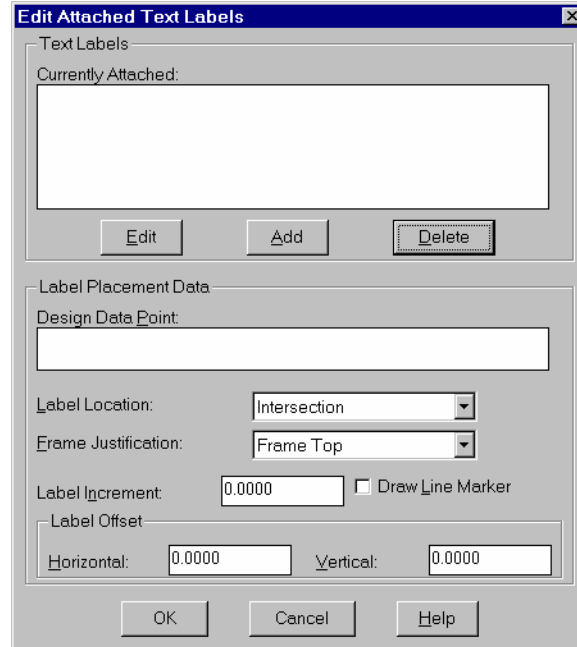
Figure 35: Edit Attached Text Labels dialog

b. Select the **Add** button in the Text Labels section of the dialog. The Select Style dialog is displayed.
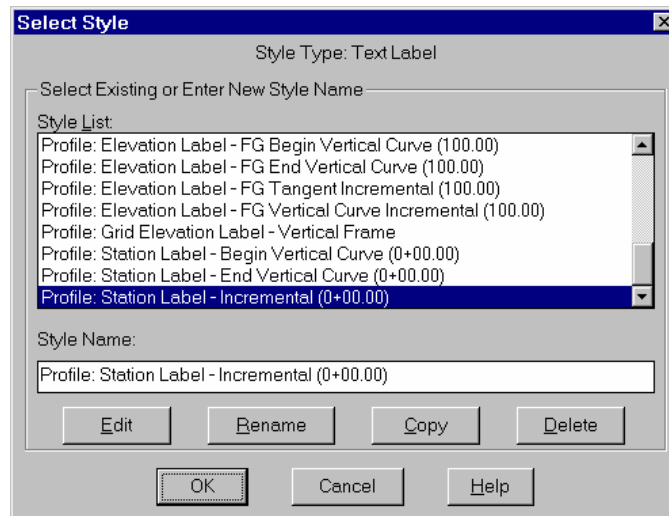
Figure 36: Select Style dialog

c. Select **Profile: Station Label – Incremental (0+00.00)** from the Style List window of the Select Style dialog.

d. Select the **Edit** button. The Text Label Properties dialog is displayed.
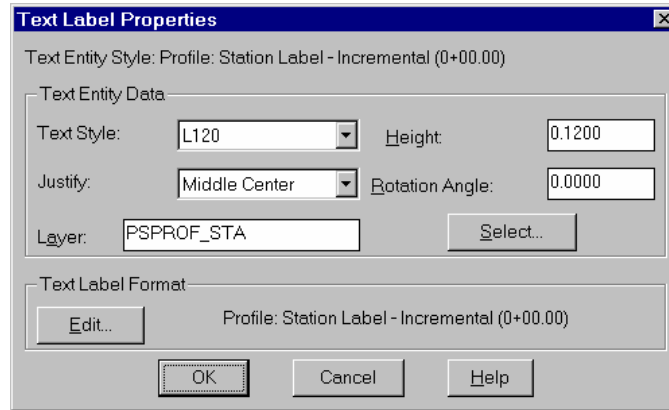
Figure 37: Text Label Properties dialog

e. Select **L120** for the Text Style for labeling the profile stations.

f. Enter **0.12** for the text height.

g. Select **Middle Center** for text justification.

h. Enter **0.0** for the text rotation angle.

i. In this exercise, use the default layer for this label. In production, enter the layer your office considers standard for labeling profile stations. The program will create the layer specified if it does not exist.

j. Select the **Edit** button in the Text Label Format section of the Text Label Properties dialog. The Edit Text Format dialog is displayed.
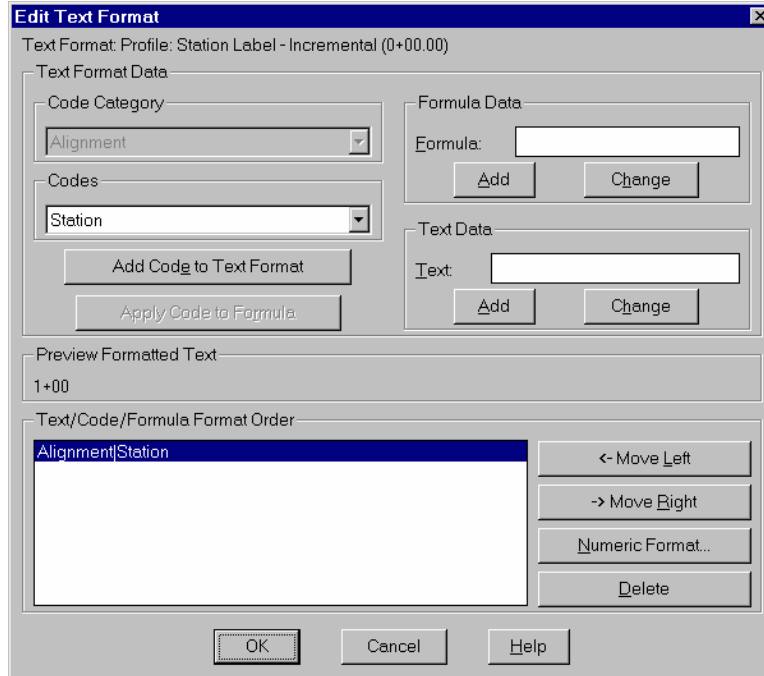
Figure 38: Edit Text Format dialog

k. Select the **Numeric Format…** button in the Text/Code/Formula Format Order section of the Edit Text Format dialog. The Edit Numeric Format dialog is displayed.
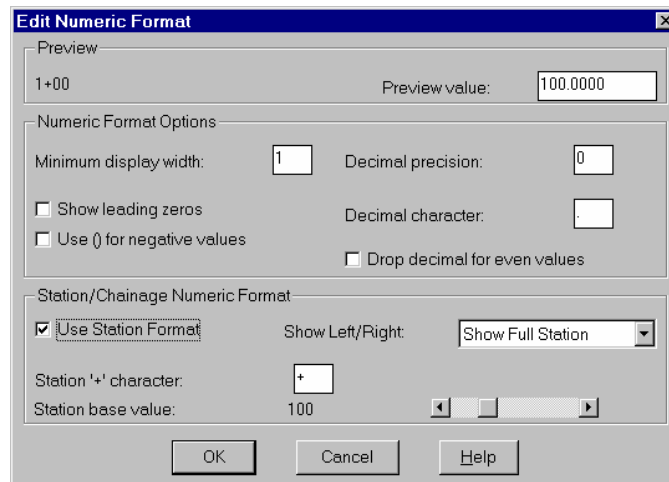
Figure 39: Edit Numeric Format dialog

l. Enter **0** in the Decimal Precision box in the Numeric Format Options section.

m. Toggle **ON** Use Station Format in the Station/Chainage Numeric Format section.

n. Select **OK** to exit the Edit Numeric Format dialog.

o. Select **OK** to exit the Edit Text Format dialog.

p. Select **OK** to exit the Text Label Properties dialog.

q. Select **OK** to exit the Select Style dialog. The Edit Attached Text Labels dialog is displayed.
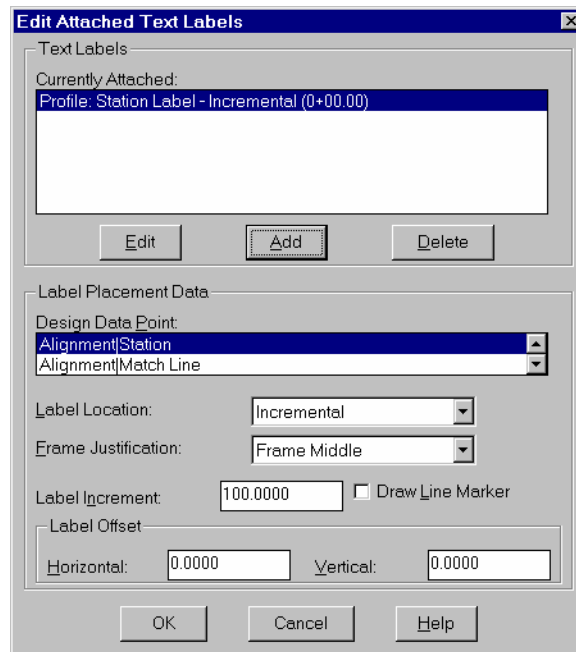
Figure 40: Edit Attached Labels dialog

r. Select **Alignment|Station** in the Design Data Point window.

s. Select **Incremental** in the Label Location window.

t. Select **Frame Middle** in the Frame Justification window.

u. Enter **100** for the Label Increment. This will label the profile stations every 100 feet across the bottom of the profile.

v. Select **OK** to exit the Edit Attached Text Labels dialog.

w. Select **OK** to return to the drawing.

x. **Save** the drawing.

6. Create the Existing and Finish Grade Elevation Labels

Now we need to create the frame and attach the elevation labels for the existing ground, finish grade tangents, and vertical curves. In our exercise, this frame is located at the bottom of our profile just above the profile station label frame.

Create the Center Line Elevation Label Frame

a. Restore the layer state **MARKER PROF EG** and return to the drawing. This layer state isolates a layer marking the locations of the Center Line Elevation Label frame.

b. Select **OK** to return to the drawing.

c. Select **Create/Edit Frame** from Sheet Styles on the Sheet Manager menu. You will be prompted to select a frame for editing or to press Enter to create a new frame. Press **Enter**. The Edit Frame Data dialog is displayed.

d. Select **Pick Origin/Size<<** in the Frame Properties section of the dialog.

e. Use the Endpoint object snap to select the lower left and upper right corners of the rectangle located just above the profile station label frame.

f. Select **Profile** for the Type and **Label** for the Category in the Frame Style/Label Data section of the dialog.

Do not exit this dialog yet. Next we will attach the EG elevation labels.
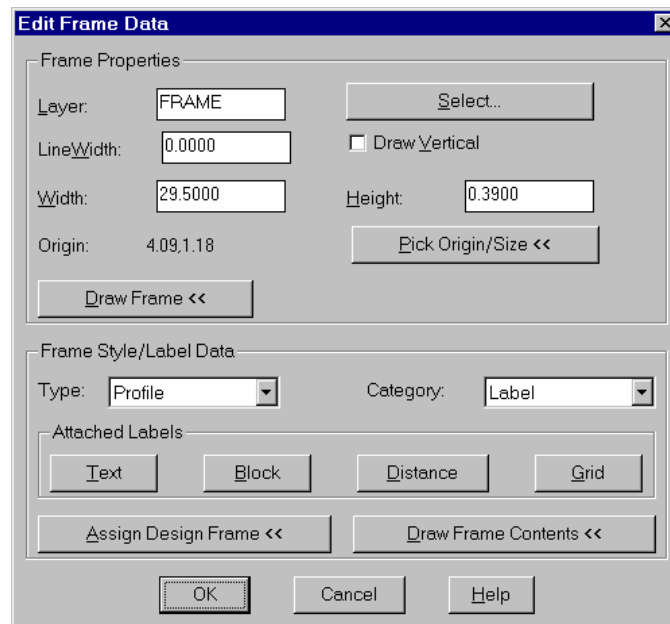
Figure 41: Edit Frame Data dialog

Attach and Configure the EG Elevation Labels

a. Select the **Text** button on the Attached Labels section of the Edit Frame Data dialog. (See previous page) The Edit Attached Labels dialog is displayed.
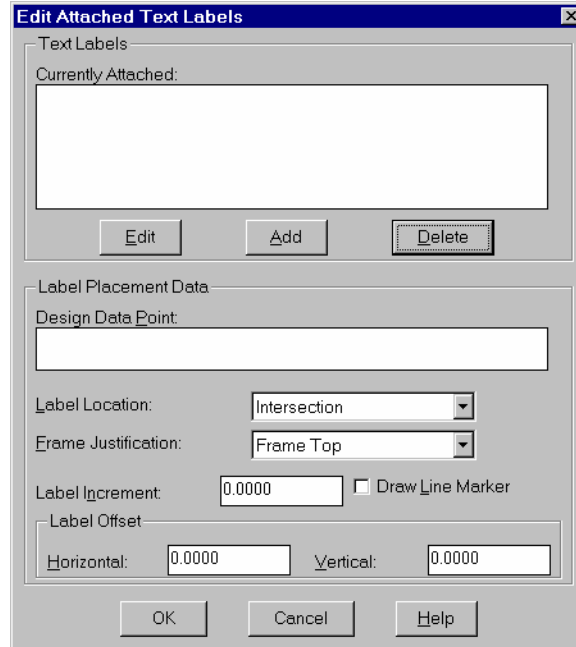
Figure 42: Edit Attached Text Labels dialog

b. Select the **Add** button in the Text Labels section of the dialog. The Select Style dialog is displayed.
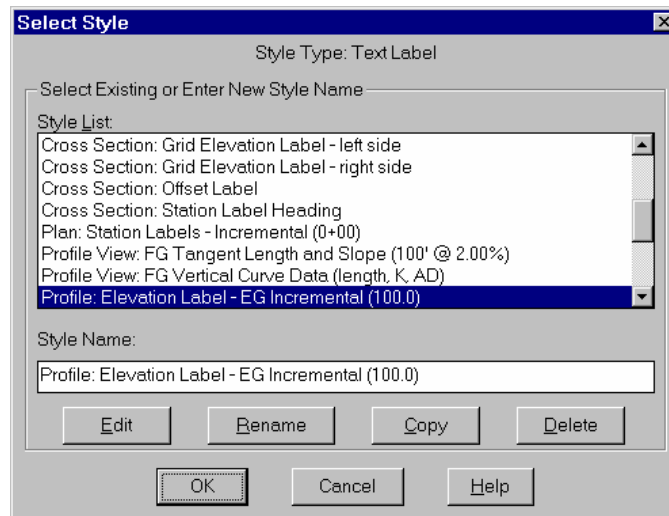

Figure 43: Select Style dialog

c. Select **Profile Elevation Label – EG Incremental (100.00)** from the Style List window of the Select Style dialog.

d. Select the **Edit** button. The Text Label Properties dialog is displayed.
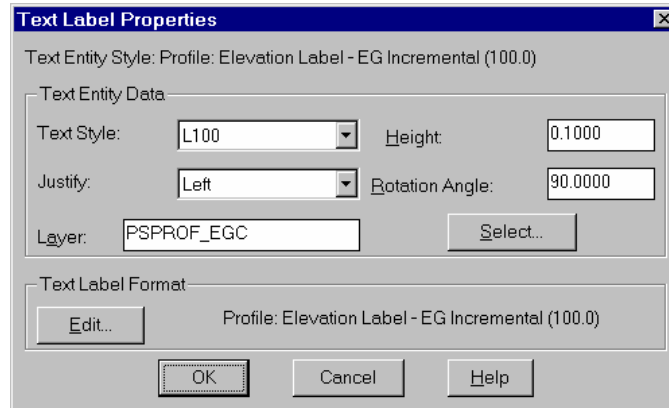
Figure 44: Text Label Properties dialog

e. Select **L100** for the Text Style for labeling the profile EG elevations.

f. Enter **0.10** for Height.

g. Select **Left** for the text justification.

h. Enter **90.0** for the Rotation Angle.

i. In this exercise, use the default layer for these elevation labels. In production, enter the layer your office considers standard for labeling profile elevations. The program will create the layer specified if it does not exist.

j. Select the **Edit…** button in the Text Label Format section of the Text Label Properties dialog. The Edit Text Format dialog is displayed.
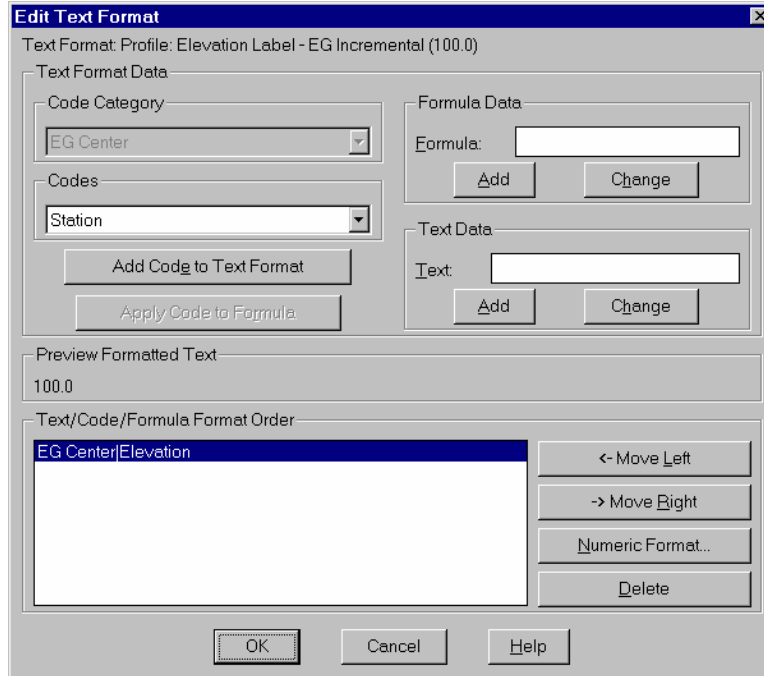
Figure 45: Edit Text Format dialog

k. Select the **Numeric Format…** button in the Text/Code/Formula Format Order section. The Edit Numeric Format dialog is displayed.
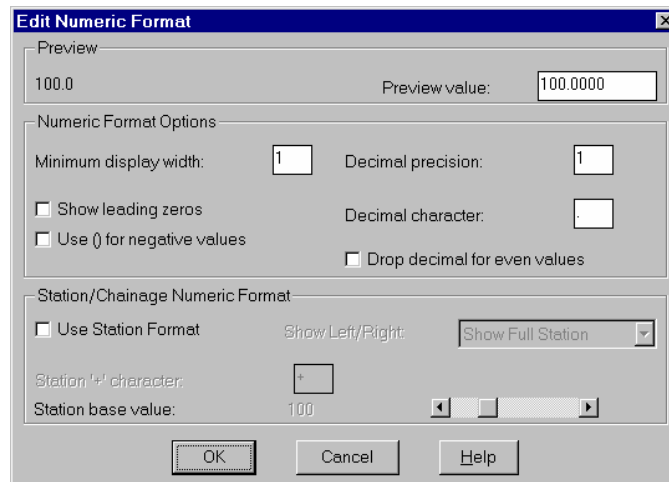
Figure 46: Edit Numeric Format dialog

l. Enter **1** for the Decimal Precision.

m. Select **OK** to exit the Edit Numeric Format dialog.

n. Select **OK** to exit the Edit Text Format dialog.

o. Select **OK** to exit the Select Style dialog.

p.   Select **OK** to exit the Text Label Properties dialog. The Edit Attached Text Labels dialog is displayed.
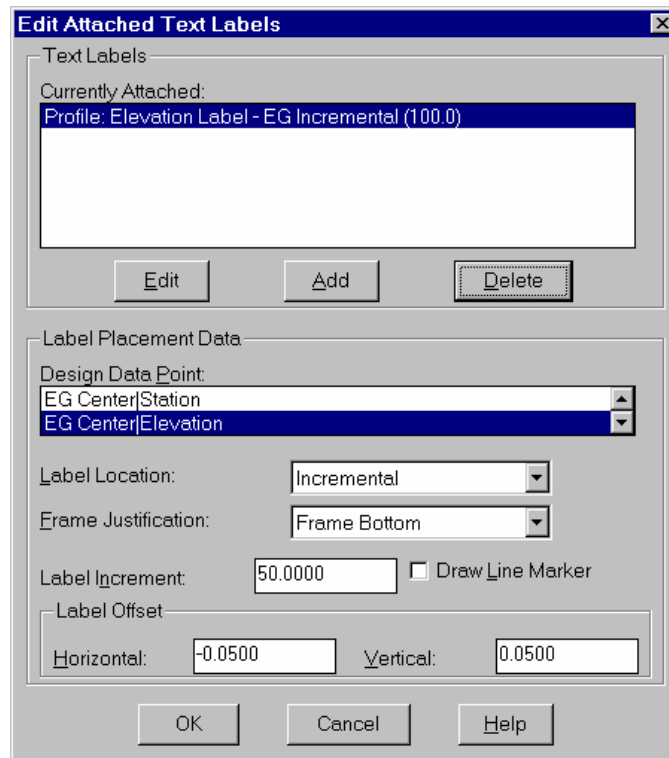
Figure 47: Edit Attached Text Labels dialog

q.   Select **EG Center|Elevation** in the Design Data Point window.

r.   Select **Incremental** in the Label Location window.

s.   Select **Frame Bottom** in the Frame Justification window.

t.   Enter **50** in the Label Increment box. This will place an EG elevation label every 50 feet along the bottom of the profile viewport.

u.   Enter **–0.05** for the Horizontal Label Offset. This will place the EG elevation label slightly left of the vertical grid line.

v.   Enter **0.05** for the Vertical Label Offset. This will place the EG elevation label slightly above the frame bottom.

Do not exit the dialog yet. Next we will attach the Finish Grade Elevation Labels.

Attach and Configure the Finish Grade Tangent Elevation Labels

a.   Select the **Add** button in the Text Labels section of the dialog. The Select Style dialog is displayed.
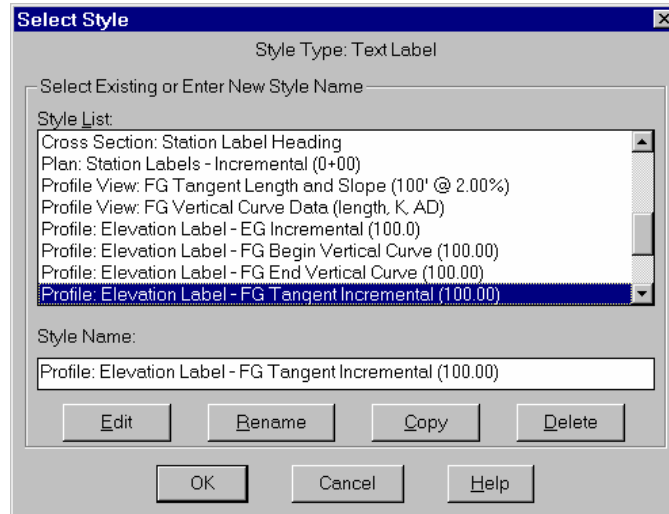
Figure 48: Select Style dialog

b.   Select **Profile Elevation Label – FG Tangent Incremental (100.00)** from the Style List window of the Select Style dialog.

c.   Select the **Edit** button. The Text Label Properties dialog is displayed.
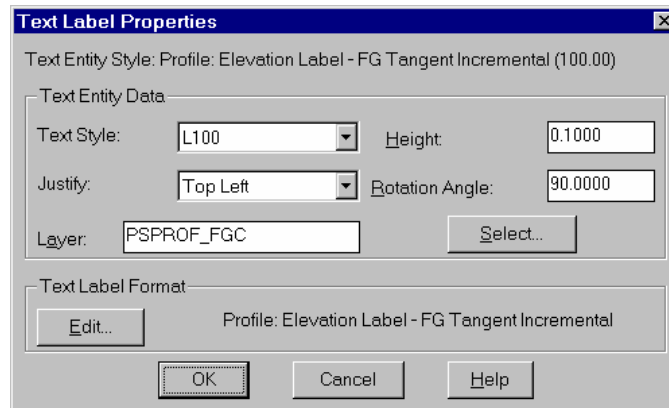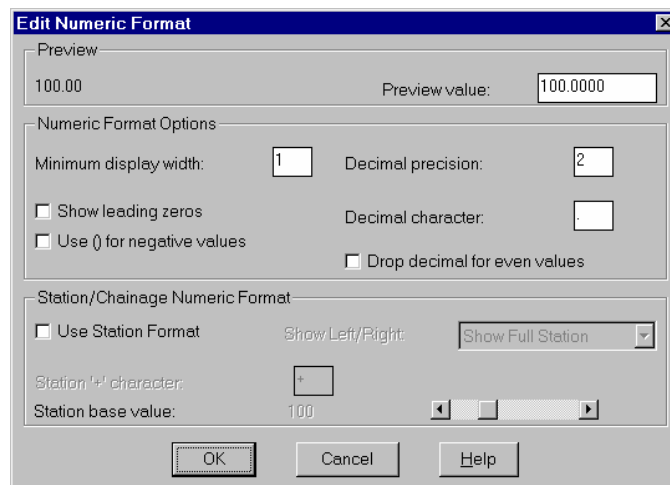
Figure 49: Text Label Properties dialog

d.   Select **L100** for the Text Style for labeling the profile FG elevations.

e.   Enter **0.10** for Height.

f.   Select **Top Left** for the text justification.

g.   Enter **90.0** for the Rotation Angle.

h. In this exercise, use the default layer for these elevation labels. In production, enter the layer your office considers standard for labeling profile elevations. The program will create the layer specified if it does not exist.

i. Select the **Edit…** button in the Text Label Format section of the Text Label Properties dialog. The Edit Text Format dialog is displayed.
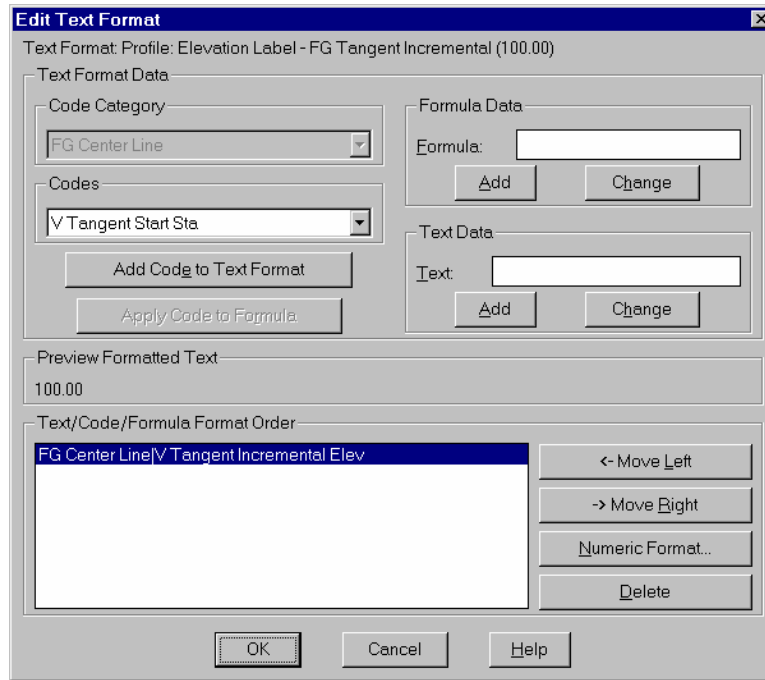
Figure 50: Edit Text Format dialog

j. Select the **Numeric Format…** button in the Text/Code/Formula Format Order section. The Edit Numeric Format dialog is displayed.

Figure 51: Edit Numeric Format dialog

k. Enter **2** for the Decimal Precision.

l.   Select **OK** to exit the Edit Numeric Format dialog.

m.   Select **OK** to exit the Edit Text Format dialog.

n.   Select **OK** to exit the Text Label Properties dialog.

o.   Select **OK** to exit the Select Style dialog. The Edit Attached Text Labels dialog is displayed.
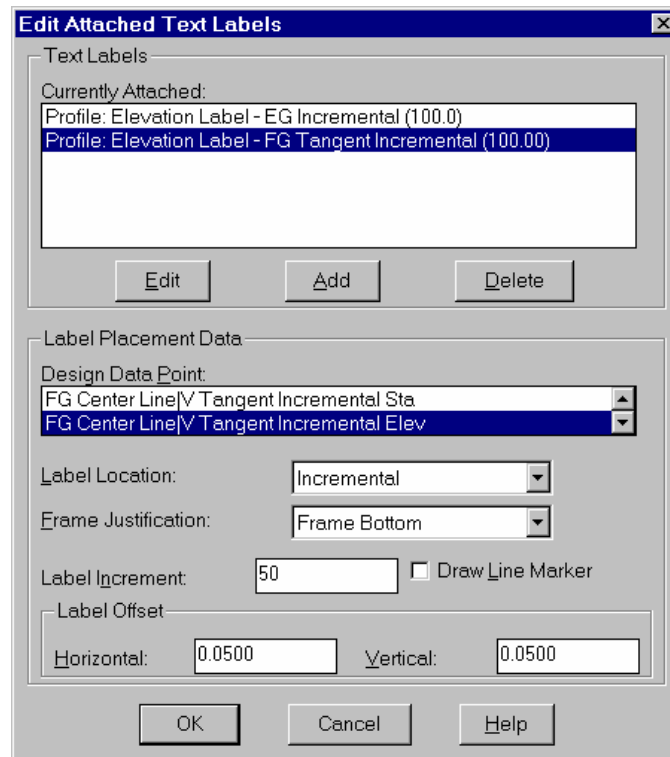
Figure 52: Edit Attached Text Labels dialog

p.   Select **FG Center Line|V Tangent Incremental Elev** in the Design Data Point window.

q.   Select **Incremental** in the Label Location window.

r.   Select **Frame Bottom** in the Frame Justification window.

s.   Enter **50** in the Label Increment box. This will place an FG Tangent elevation label every 50 feet along the bottom of the profile viewport.

t.   Enter **0.05** for the Horizontal Label Offset. This will place the FG elevation label slightly right of the vertical grid line.

u.   Enter **0.05** for the Vertical Label Offset. This will place the FG elevation label slightly above the frame bottom.

Do not exit the dialog yet. Next we will attach the Finish Grade Vertical Curve Elevation Labels.

Attach the Finish Grade Vertical Curve Elevation Labels

a.   Select the **Add** button in the Text Labels section of the dialog. The Select Style dialog is displayed.
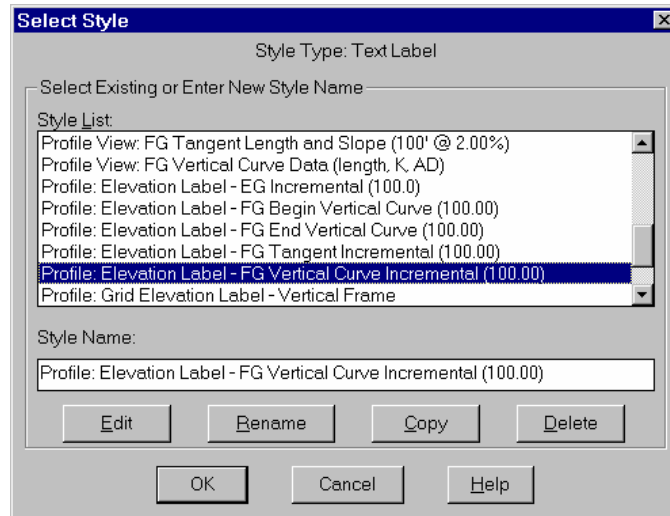
Figure 53: Select Style dialog

b.   Select **Profile Elevation Label – FG Vertical Curve Incremental (100.00)** from the Style List window of the Select Style dialog.

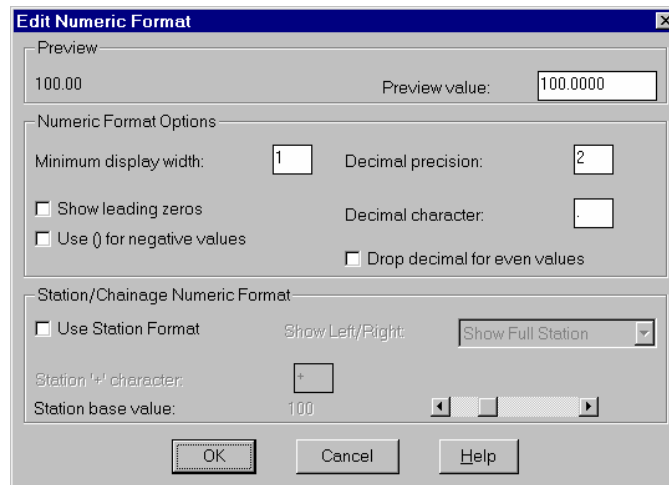c.   Select the **Edit** button. The Text Label Properties dialog is displayed.
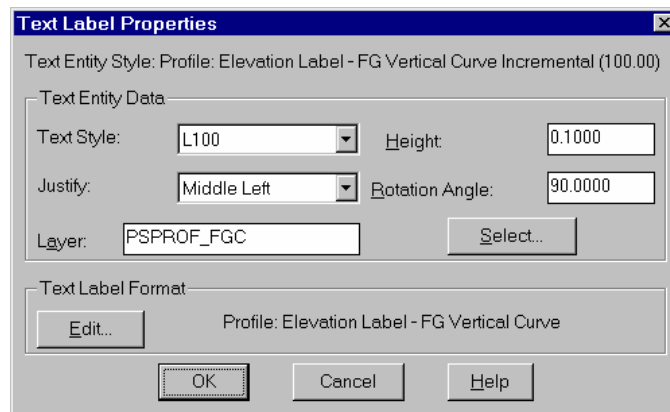
Figure 54: Text Label Properties dialog

d.   Select **L100** for the Text Style for labeling the profile EG elevations.

e.   Enter **0.10** for Height.

f.   Select **Middle Left** for the text justification.

g.   Enter **90.0** for the Rotation Angle.

h.   In this exercise, use the default layer for these elevation labels. In production, enter the layer your office considers standard for labeling profile elevations. The program will create the layer specified if it does not exist.

i.   Select the **Edit…** button in the Text Label Format section of the Text Label Properties dialog. The Edit Text Format dialog is displayed.
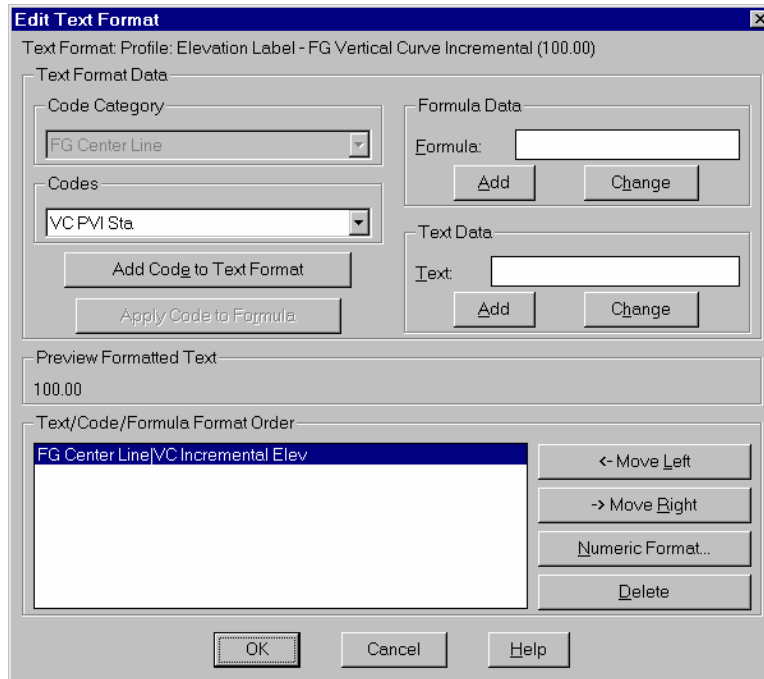
Figure 55: Edit Text Format dialog

j. Select the **Numeric Format…** button in the Text/Code/Formula Format Order section. The Edit Numeric Format dialog is displayed.

Figure 56: Edit Numeric Format dialog

k. Enter **2** for the Decimal Precision.

l. Select **OK** to exit the Edit Numeric Format dialog.

m. Select **OK** to exit the Edit Text Format dialog.

n. Select **OK** to exit the Text Label Properties dialog.

o. Select **OK** to exit the Select Style dialog. The Edit Attached Text Labels dialog is displayed.
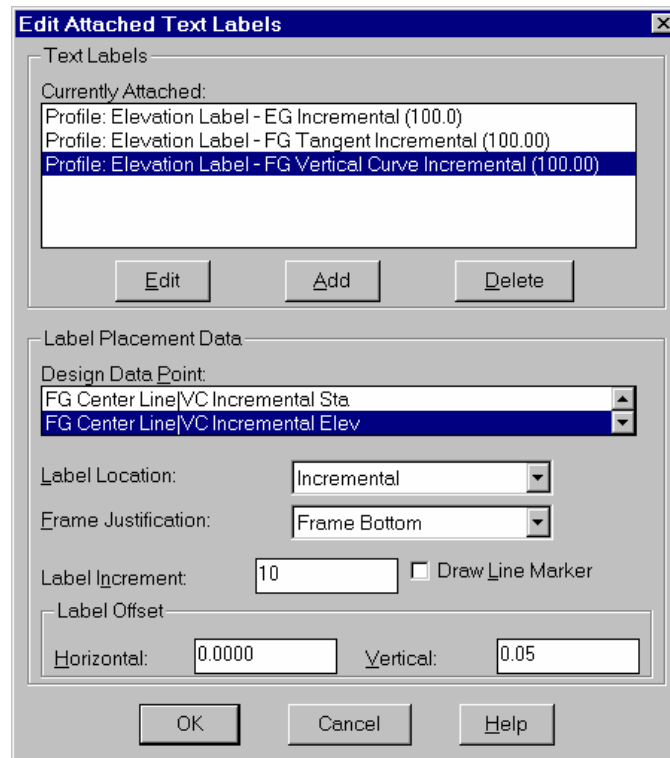
Figure 57: Edit Attached Text Labels dialog

p. Select **FG Center Line|VC Incremental Elev** in the Design Data Point window.

q. Select **Incremental** in the Label Location window.

r. Select **Frame Bottom** in the Frame Justification window.

s. Enter **10** in the Label Increment box. This will place a FG Vertical Curve elevation label every 10 feet along the bottom of the profile viewport.

t. Enter **0.00** for the Horizontal Label Offset. The Middle Left text justification of these elevations will be aligned with the actual point in the vertical curve.

u. Enter **0.05** for the Vertical Label Offset. This will place the FG Vertical Curve elevation label slightly above the frame bottom.

v. Select **OK** to return to the Edit Frame Data dialog.

w. Select **OK** to return to the drawing.

x. **SAVE** the drawing.

7. Creating Match Line Station Labels

Now we will create the frames and attach the labels for the Match Line Stations.

Create the Match Line Station Label Frames.

a. Restore the named layer state **MARKER MATCH LINE** and return to the drawing. This layer state isolates a layer marking the locations of the Match Line Station Label frames.

b. Select **OK** to return to the drawing.

c. Select **Create/Edit Frame** from Sheet Styles on the Sheet Manager menu. You will be prompted to select a frame for editing or to press Enter to create a new frame. Press **Enter**. The Edit Frame Data dialog is displayed.

d. Select **Pick Origin/Size<<** in the Frame Properties section of the dialog.

e. Use the Endpoint object snap to select the lower left and upper right corners of rectangle #1 located on the left side of the profile area.

f. Select **Profile** for the Type and **Label** for the Category in the Frame Style/Label Data section of the dialog.

Do not exit this dialog yet. Next we will attach the Match Line Station labels.
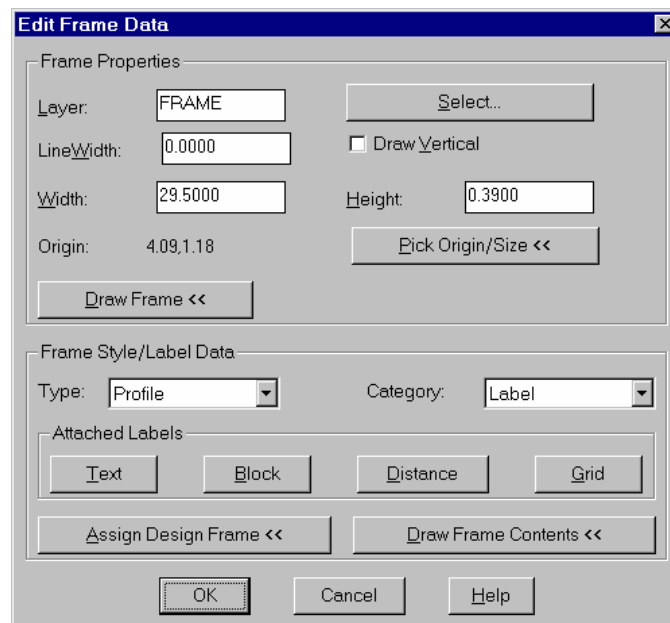

Figure 58: Edit Frame Data dialog

Attach and Configure the Match Line Station Labels

a. Select the **Text** button on the Attached Labels section of the Edit Frame Data dialog. (See previous page) The Edit Attached Labels dialog is displayed.
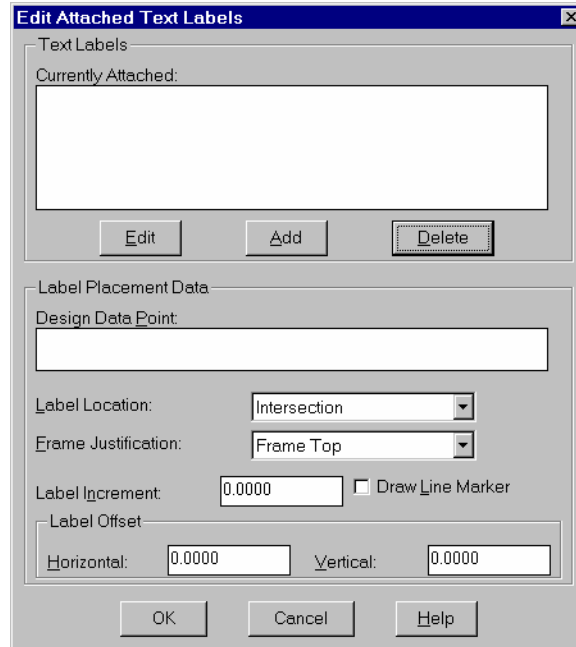

Figure 59: Edit Attached Text Labels dialog

b. Select the **Add** button in the Text Labels section of the dialog. The Select Style dialog is displayed. The default label styles do not include a profile station label for match lines so one must be created.
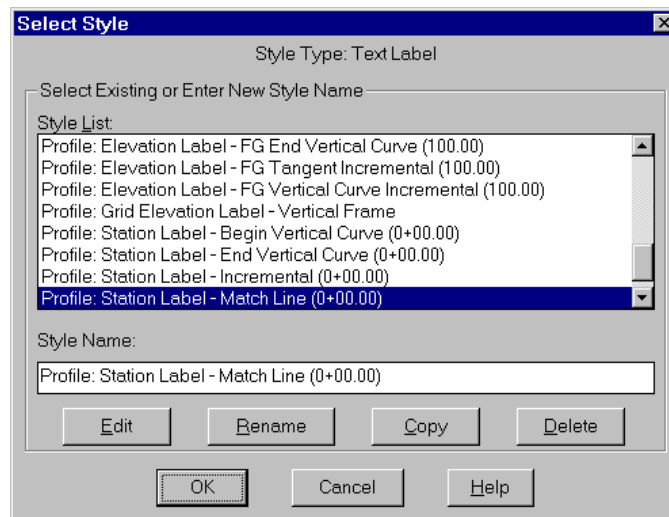

Figure 60: Select Style dialog

c. Enter **Profile Station Label – Match Line (0+00.00)** for the Style Name and select the **Edit** button. The Text Label Properties dialog is displayed.
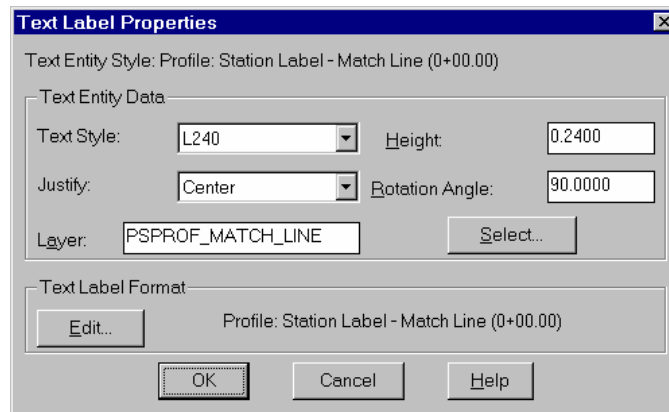
Figure 61: Text Label Properties dialog

d. Select **L240** for the Text Style for labeling the profile EG elevations.

e. Enter **0.2400** for Height.

f. Select **Center** for the text justification.

g. Enter **90.0** for the Rotation Angle.

h. Enter **PSPROF_MATCH_LINE** for the layer. This layer name is consistent with the default layer-naming format used in previous sections. In production, enter the layer your office considers standard for labeling Match Line Stations. The program will create the layer specified if it does not exist.

i. Select the **Edit…** button in the Text Label Format section of the Text Label Properties dialog. The Edit Text Format dialog is displayed.
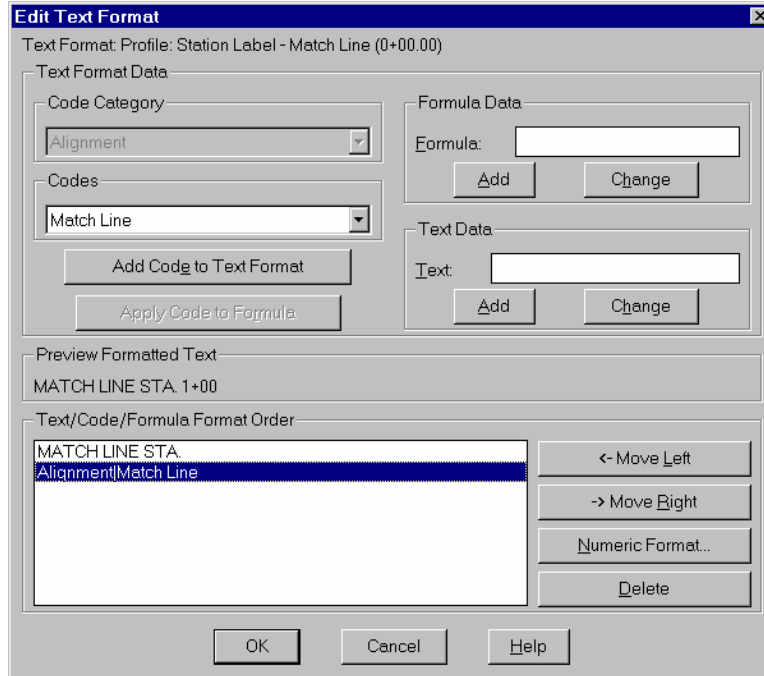
Figure 62: Edit Text Format dialog

j.   Select **Alignment** for the Code Category.

k.   Select **Match Line** for the Code.

l.   Enter **MATCH LINE STA** in the Text Data section and select **Add**. This adds the words to the Text/Code/ Formula Format Order window. *(HINT: Include a space after STA to separate the station number from the label.)*

m.   Select the **Add Code to Text Format** button. This adds the match Line code below the text data you just entered. The <- Move Left and ->Move Right buttons are for arranging the codes and text data into the desired sequence.

n.   Select the code **Alignment|Match Line** in the Text/Code/Formula Format Order section and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed.
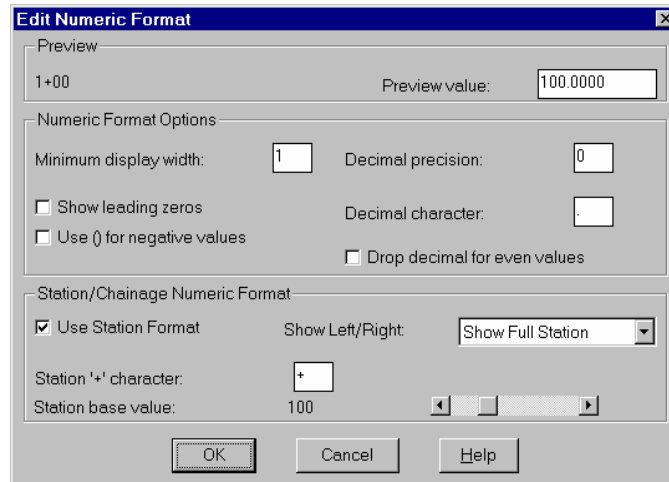
Figure 63: Edit Numeric Format dialog

o. Enter **0** for the Decimal Precision.

p. Toggle **ON** Use Station Format.

q. Select **OK** to exit the Edit Numeric Format dialog.

r. Select **OK** to exit the Edit Text Format dialog.

s. Select **OK** to exit the Text Label Properties dialog.

t. Select OK to exit the Select Style dialog. The Edit Attached Text Labels dialog is displayed.
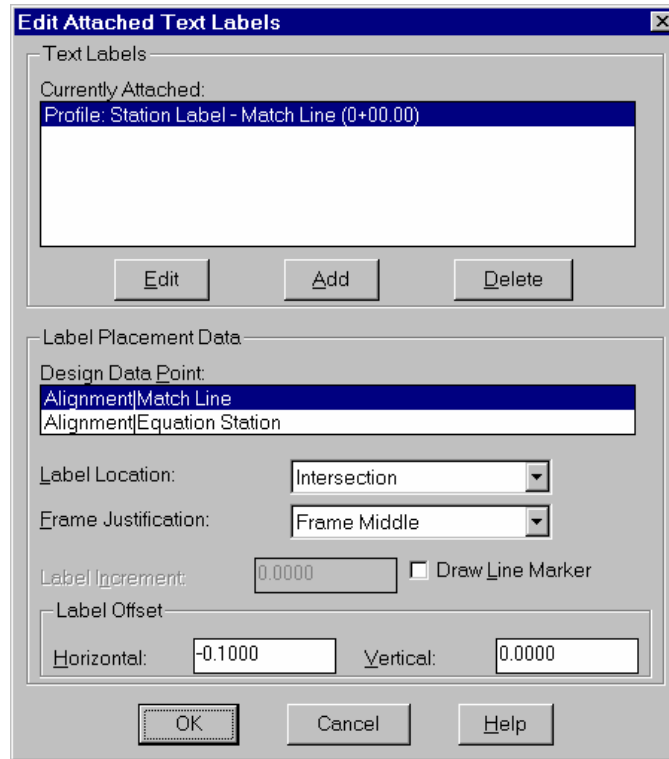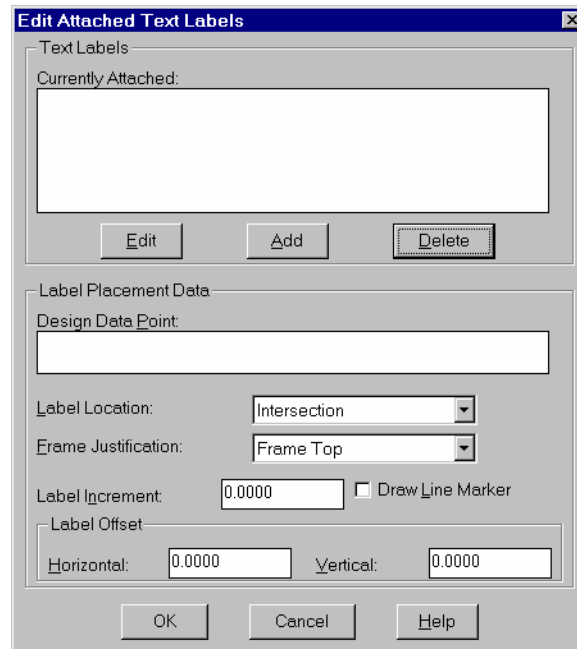
Figure 64: Edit Attached Text Labels dialog

u. Select **Alignment|Match Line** in the Design Data Point window.

v. Select **Intersection** in the Label Location window.

w. Select **Frame Middle** in the Frame Justification window.

x. Enter **-.10** as the Horizontal Offset. The offsets for the Match Line Station Labels for frames 2-4 are: **0.34, -0.10, and 0.34** respectively.

y. Select **OK** to exit the Edit Attached Text Labels dialog

z. Select **OK** to exit the Edit Frame Data dialog and return to the drawing

aa. **Save** the drawing.

bb. Repeat these steps for rectangles 2-4. Note the offset values in step **X**.

8. Additional Profile Viewport Annotation

As in previous exercises, the annotation is attached to a frame. The user specifies the placement, layer, and style of annotation that can include blocks, distances, and grids in addition to the text labels we have applied thus far.
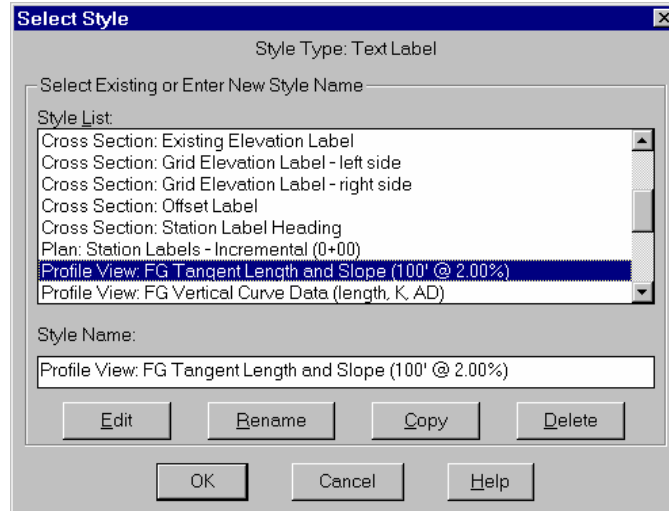
Attach and Configure the FG Tangent Labels

a. Select the **Text** button on the Attached Labels section of the Edit Frame Data dialog. The Edit Attached Labels dialog is displayed.
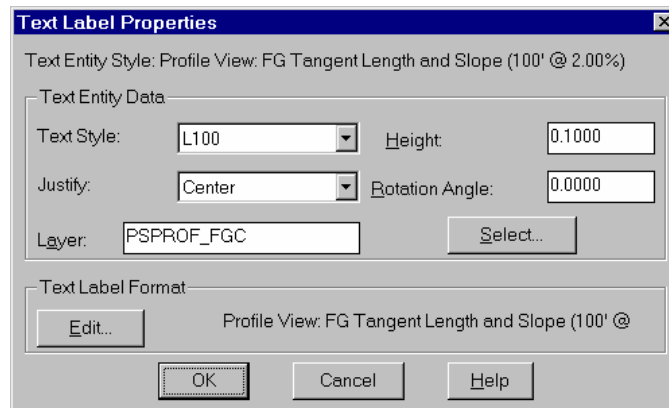

Figure 65: Edit Attached Text Labels dialog

b. Select the **Add** button in the Text Labels section of the dialog. The Select Style dialog is displayed.

Figure 66: Select Style dialog

c. Select **Profile View: FG Tangent Length and Slope (100' @ 2.00%)** from the Style list.

d. Select the **Edit** button. The Text Label Properties dialog is displayed.


Figure 67: Text Label Properties

e. Select **L100** from the Text Style list.

f. Enter **0.10** for the Height.

g. Select **Center** from the Justify list.

h. Enter **0.00** for the Rotation Angle.

i. In this exercise, use the default layer for these elevation labels. In production, enter the layer your office considers standard for labeling profile elevations. The program will create the layer specified if it does not exist.

j. Select the **Edit…** button in the Text Label Format section of the Text Label Properties dialog. The Edit Text Format dialog is displayed.
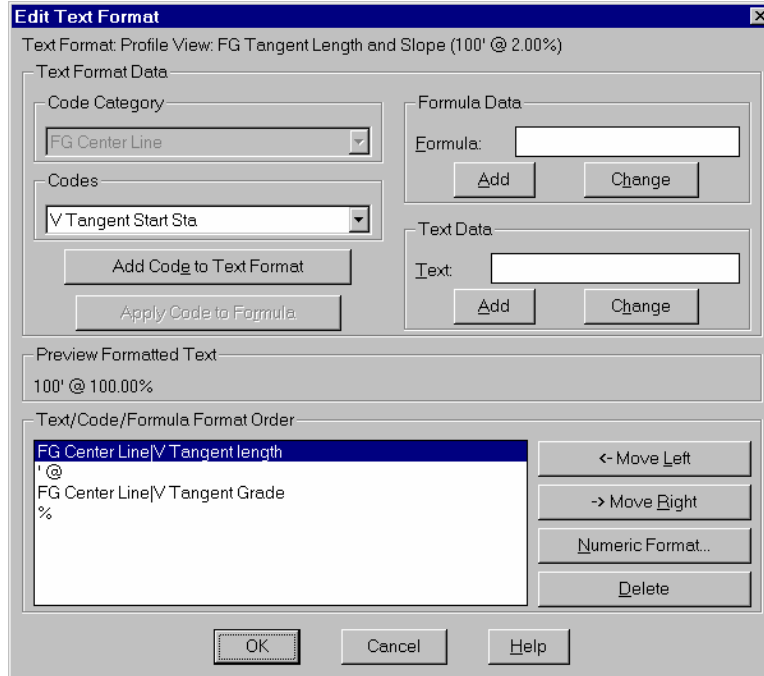
**Figure 68: Edit Text Format dialog**

j. Select **FG Center Line|V Tangent Length** in the Text/Code/Formula Format Order section and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed.
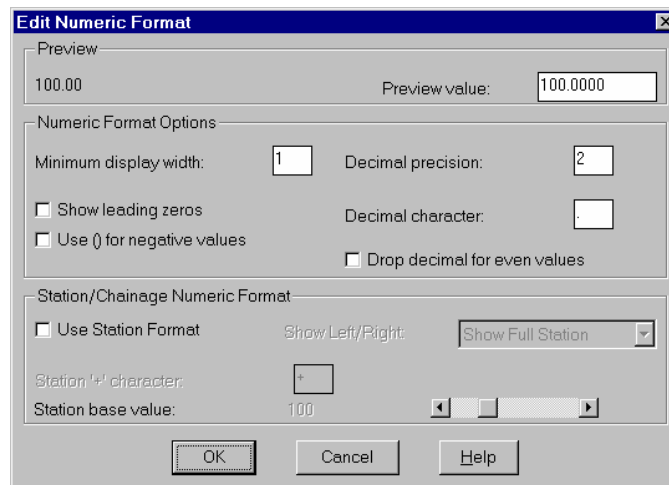
Figure 69: Edit Numeric Format dialog

k. Enter **2** for the Decimal Precision.

l. Select **OK** to exit the Edit Numeric Format dialog.

m. Select **FG Center Line|V Tangent Grade** in the Text/Code/Formula Format Order section and select the **Numeric Format…** button.

n.   Enter **3** for the Decimal Precision.

o.   Select **OK** to exit the Edit Numeric Format dialog.

p.   Select **OK** to exit the Edit Text Format dialog.

q.   Select **OK** to exit the Text Label Properties dialog.

r.   Select **OK** to exit the Select Style dialog. The Edit Attached Text Labels dialog is
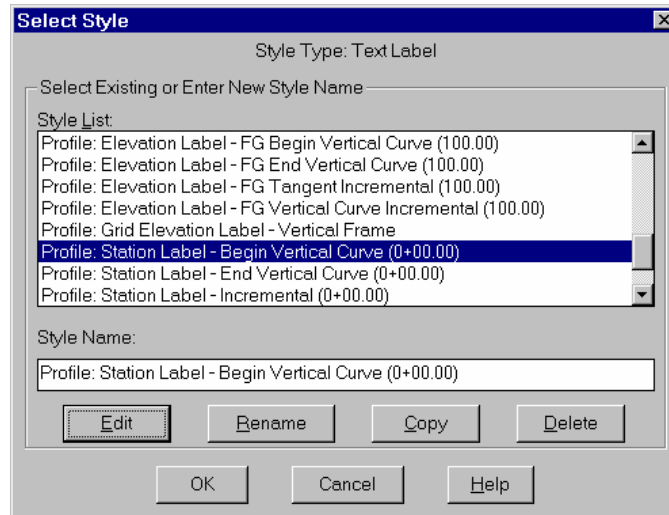   displayed.
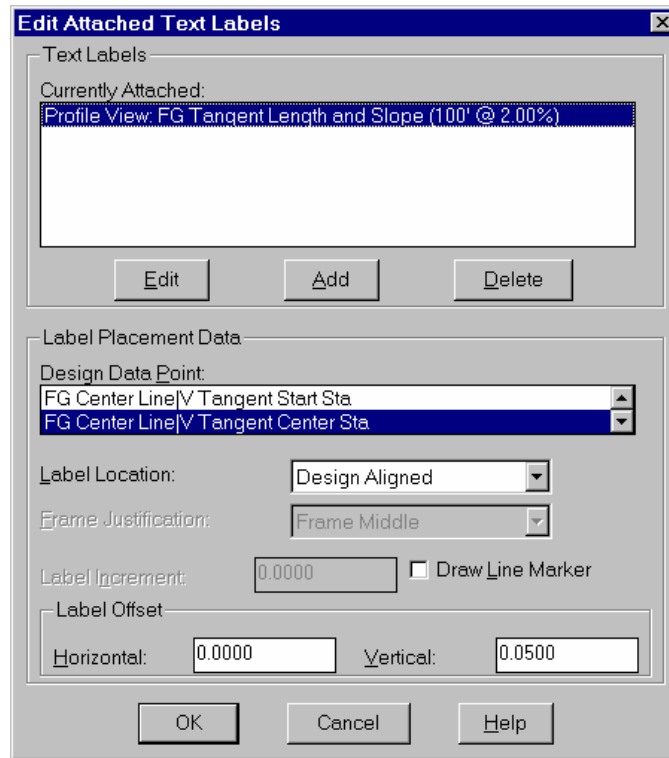
Figure 70: Edit Attached Text Labels dialog

s.   Select **FG Center Line|V Tangent Center Sta** in the Design Data Point window.

t.   Select **Design Aligned** in the Label Location window.

u.   Enter **0.05** for the Vertical Label Offset.

Do not exit this dialog yet. Next we will attach and configure the Begin/End Vertical Curve
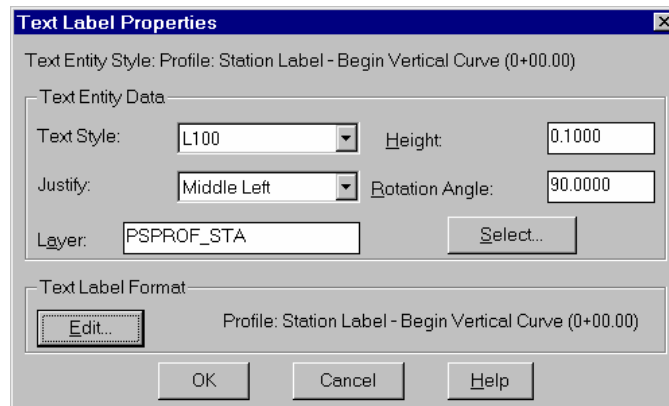Station labels.

Attach and Configure the Begin Vertical Curve Stations

a. Select the **Add** button in the Text Labels section of the dialog. The Select Style dialog is displayed.


Figure 71: Select Style dialog

b. Select **Profile: Station Label – Begin Vertical Curve (0+00.00)** from the Style List.

c. Select the **Edit** button. The Text Label Properties dialog is displayed.


Figure 72: Text Label Properties dialog

d. Select **L100** from the Text Style list.

e. Enter **0.1** for the Height.

f. Select **Middle Left** from the Justify list.

g. Enter **90.00** for the Rotation Angle.

h. In this exercise, use the default layer for these station labels. In production, enter the layer your office considers standard for labeling vertical curve stations. The program will create the layer specified if it does not exist.

i. Select the **Edit…** button in the Text Label Format section. The Edit Text Format dialog is displayed. Notice that FG Center Line is already selected as the Code Category.

j. Select **VC BVC Sta** from the Codes list.

k. Select the **Add Code to Text Format** button. This adds the code FG Center Line|VC BVC Sta to the Text/Code/Formula Format Order window.

l. Enter **Begin VC Sta:** in the Text Data window and select **Add**.
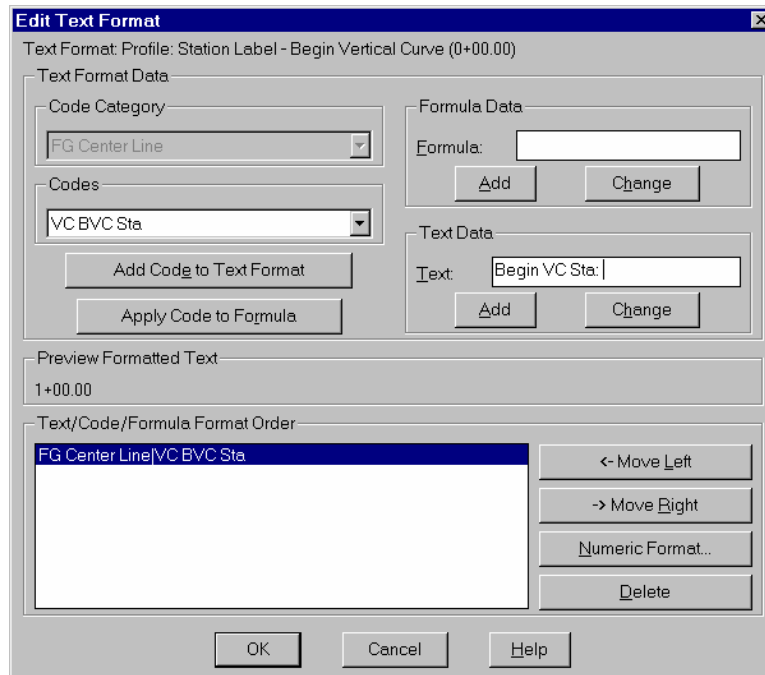
**Figure 73: Edit Text Format dialog**

m. Select the **<- Move Left** button to position the Text Data in front of FG Center Line|VC BVC Sta. This will place the text in front of the actual begin vertical curve station in the finished profile.

n. Select FG Center Line|VC BVC Sta in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed.
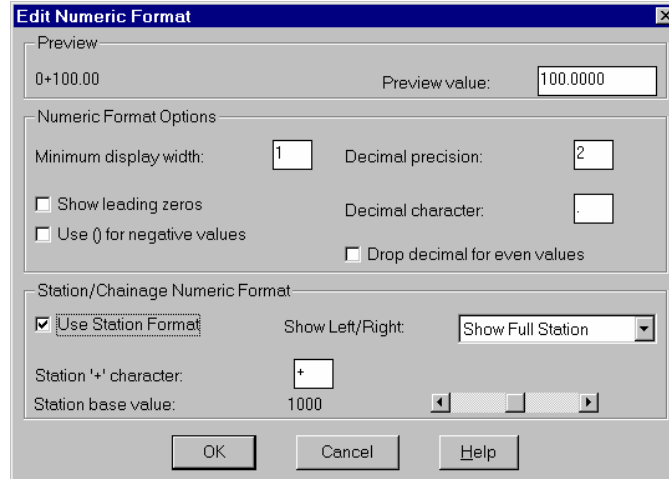
Figure 74: Edit Numeric Format dialog

o. Enter **2** for Decimal Precision in the Numeric Format Options section.

p. Toggle **ON** Use Station Format in the Station/Chainage Numeric Format section.

q. Select **OK** to exit the Edit Numeric Format dialog.

r. Select **OK** to exit the Edit Text Format dialog.

s. Select **OK** to exit the Text Label Properties dialog.

t. Select **OK** to exit the Select Style dialog. The Edit Attached Text Labels dialog is displayed.
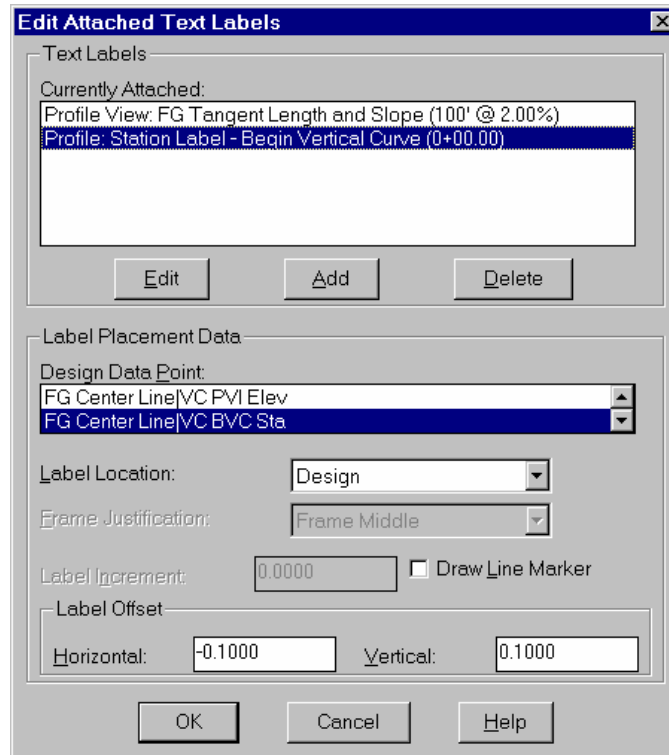
Figure 75: Edit Attached Text Labels dialog

u. Select **Profile: Station Label – Begin Vertical Curve (0+00.00)** in the Currently Attached: window.

v. Select **FG Center Line|VC BVC Sta** as the Design Data Point.

w. Select **Design** as the Label Location.

x. Enter **–0.10** for the Horizontal offset in the Label Offset section.

y. Enter **0.10** for the Vertical offset in the Label Offset section.

Do not exit this dialog yet. Next we will attach and configure the End Vertical Curve Station labels.
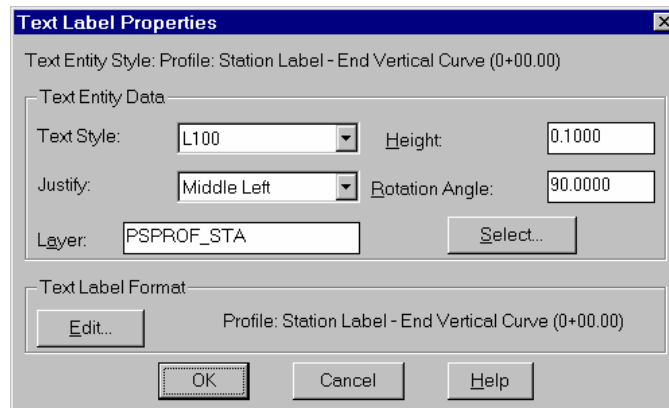
Attach and Configure the End Vertical Curve Stations

a. Select the **Add** button in the Text Labels section of the dialog. The Select Style dialog is displayed.
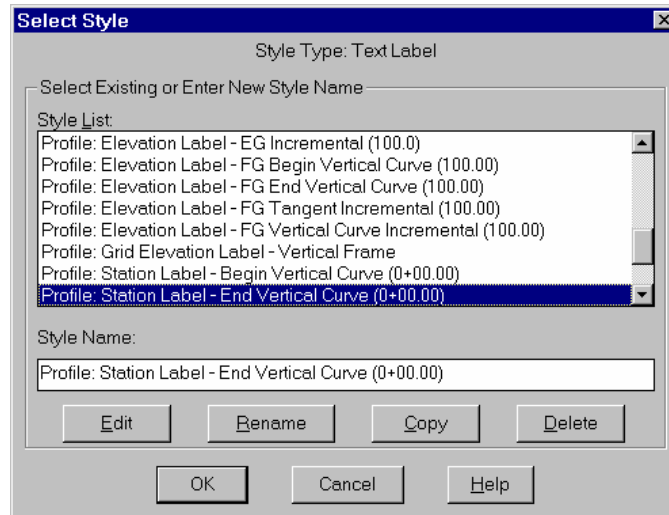
Figure 76: Select Style dialog
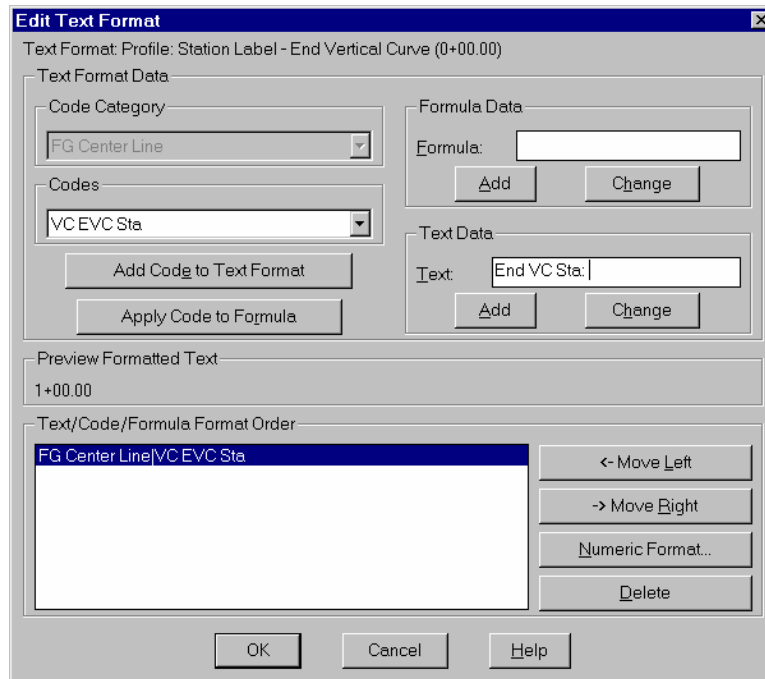
b. Select **Profile: Station Label – End Vertical Curve (0+00.00)** from the Style List.

c. Select the **Edit** button. The Text Label Properties dialog is displayed.

Figure 77: Text Label Properties dialog

d. Enter **L100** for the text style.

e. Enter **0.1** for the Height.

f. Select **Middle Left** for justification.

g. Enter **90.00** for the Rotation Angle.

h. In this exercise, use the default layer for these labels. In production, enter the layer your office considers standard for labeling vertical curve stations. The program will create the layer specified if it does not exist

i. Select the **Edit…** button in the Text Label Format section. The Edit Text Format dialog is displayed.

j. Select **VC EVC Sta** as the Code.

k. Enter **End VC Sta:** in the Text Data window and select **Add**. The text will be added to the Text/Code/Formula Format Order window.


Figure 78: Edit Text Format dialog

l. Select the **<- Move Left** button to position the Text Data in front of FG Center Line|VC EVC Sta. This will place the text in front of the actual end vertical curve station in the finished profile.

m. Select FG Center Line|VC EVC Sta in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed.
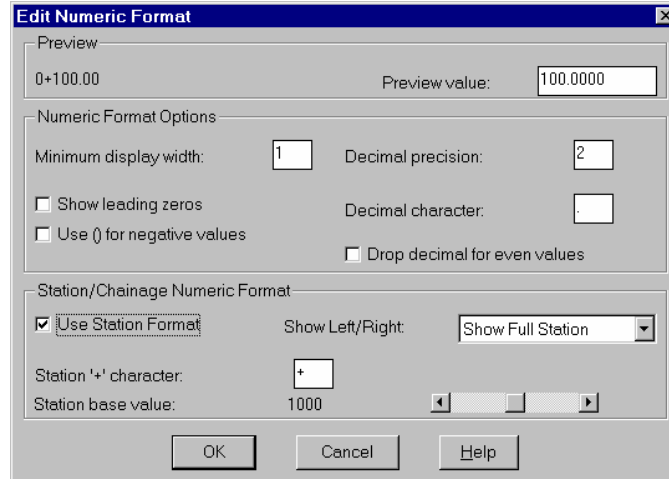
Figure 79: Edit Numeric Format dialog

n. Enter **2** for Decimal Precision in the Numeric Format Options section.

o. Toggle **ON** Use Station Format in the Station/Chainage Numeric Format section.

p. Select **OK** to exit the Edit Numeric Format dialog.

q. Select **OK** to exit the Edit Text Format dialog.

r. Select **OK** to exit the Text Label Properties dialog.

s. Select **OK** to exit the Select Style dialog. The Edit Attached Text Labels dialog is displayed.
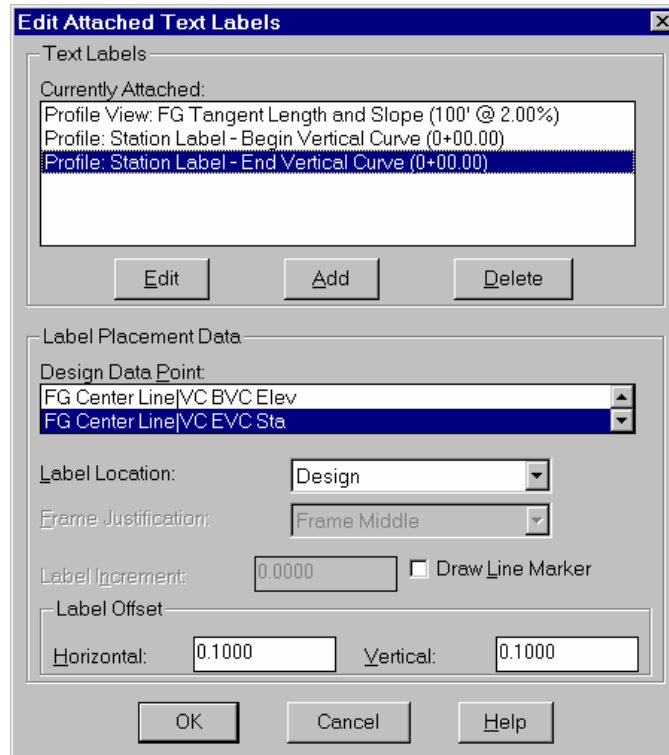
Figure 80: Edit Attached Text Labels dialog

t.   Select **Profile: Station Label – End Vertical Curve (0+00.00)** in the Currently
     Attached: window.

u.   Select **FG Center Line|VC EVC Sta** as the Design Data Point.

v.   Select **Design** as the Label Location

w.   Enter **0.10** for the Horizontal offset in the Label Offset section.

x.   Enter **0.10** for the Vertical offset in the Label Offset section

y.   Select **OK** to exit the Edit Attached Text Labels dialog.

z.   Select **OK** to exit Edit Frame Data dialog and return to the drawing.

Attach the Finish Grade Vertical Curve Labels

The finish grade vertical curve data is labeled as part of a distance label in the drawing. Each distance style is composed of a code category and code that specify what is being dimensioned. Some of the available codes do not apply to distance styles. Options such as stations, elevations, and grade breaks are not dimensioned.

A text label is attached to the dimension style much like a text label is attached to a frame. In this exercise, we will create a text label style formatted to include vertical data such as Length, K value, and the algebraic difference of the grades.

The properties of the distance style are based on a user-specified AutoCAD dimension style. This dimension style can be saved in a standard template (dwt) file or exported/imported using Express Tools.

a. Select **Distance Label** from Sheet Styles on the Sheet Manager menu. The Select Style dialog is displayed.
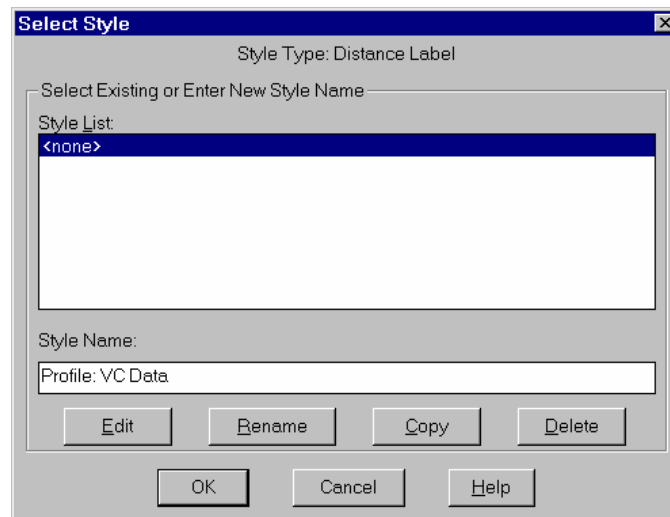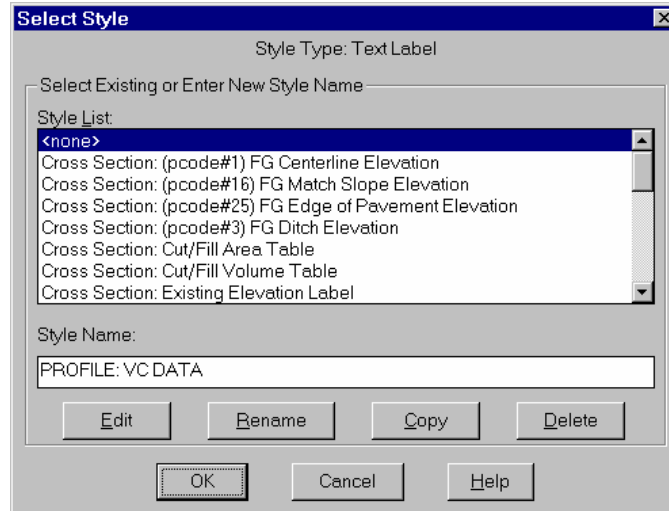

Figure 81: Select Style dialog

b. Enter **Profile: VC Data** for the Style Name.

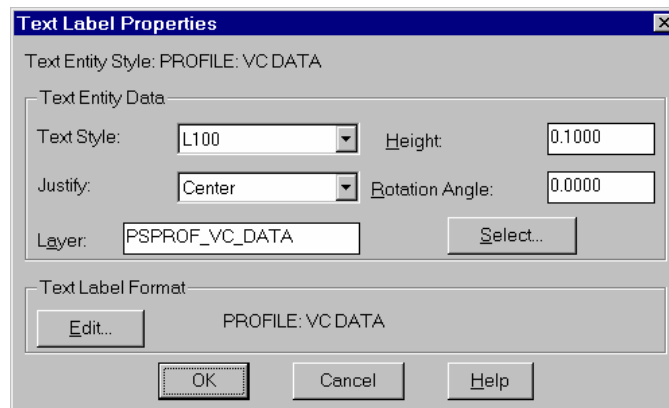c. Select the **Edit** button. The Distance Style Properties dialog is displayed.
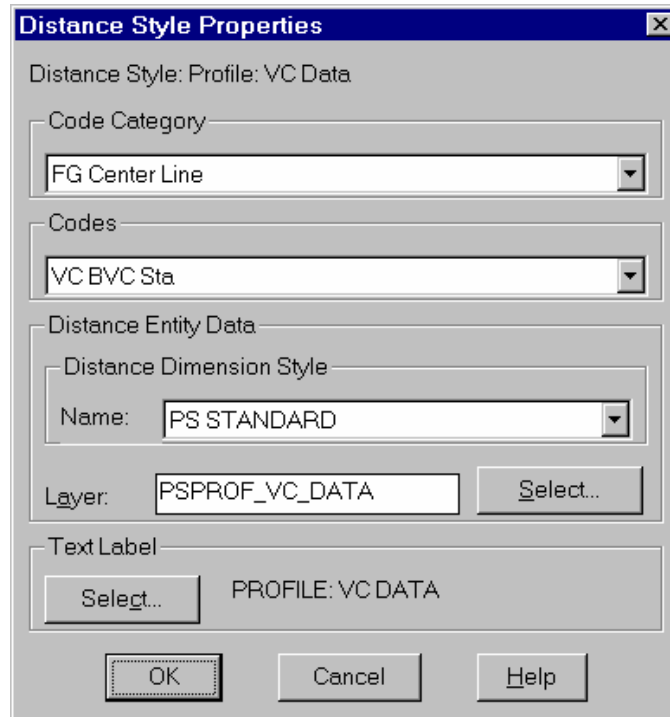
Figure 82: Distance Style Properties dialog

d.   Select **FG Center Line** for the Code Category.

e.   Select **VC BVC Sta** for the Code. The distance label begins at the beginning vertical curve station.

f.   Select the **PS STANDARD** dimension style. The dimension style controls the appearance of the dimension label style in your drawing. The PS STANDARD dimension style has been modified for the layout (paper space) in this exercise.

g.   Enter **PSPROF_VC_DATA** as the layer name.

h.   Pick the **Select…** button in the Text Label section. The Select Style dialog is displayed.

Figure 83: Select Style dialog

i. Select **Profile: VC Data** from the Style List window.

j. Select the **Edit** button. The Text Label Properties dialog is displayed.

Figure 84: Text Label Properties dialog

k. Select **L100** for the Text Style.

l. Enter **0.1** for the Height.

m. Select **Center** for the Justification.

n. Enter **0.0000** for the Rotation Angle.

o. In this exercise, enter **PSPROF_VC_DATA** as the layer for the vertical curve label. In production, enter the layer your office considers standard for labeling vertical curve data. The program will create the layer specified if it does not exist.

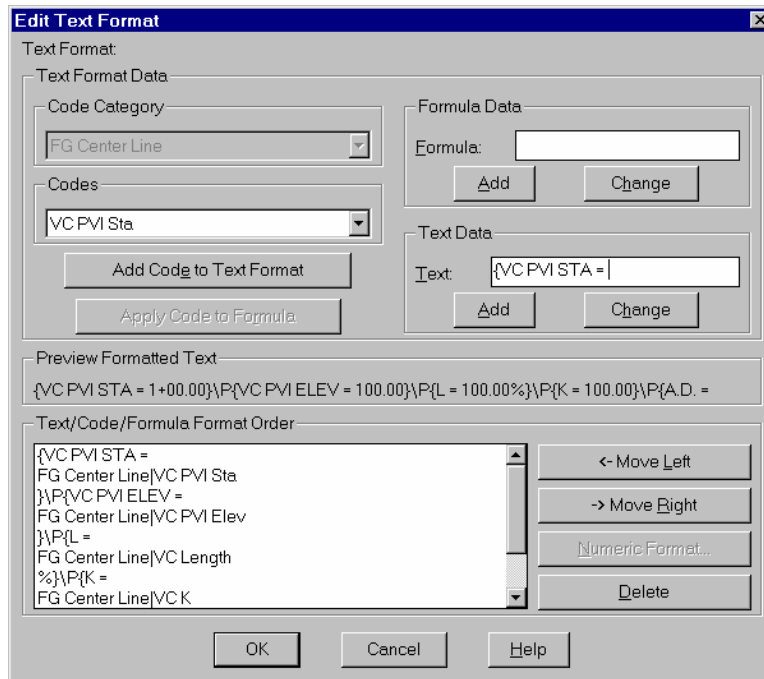p. Select the **Edit…** button. The Edit Text Format dialog is displayed.
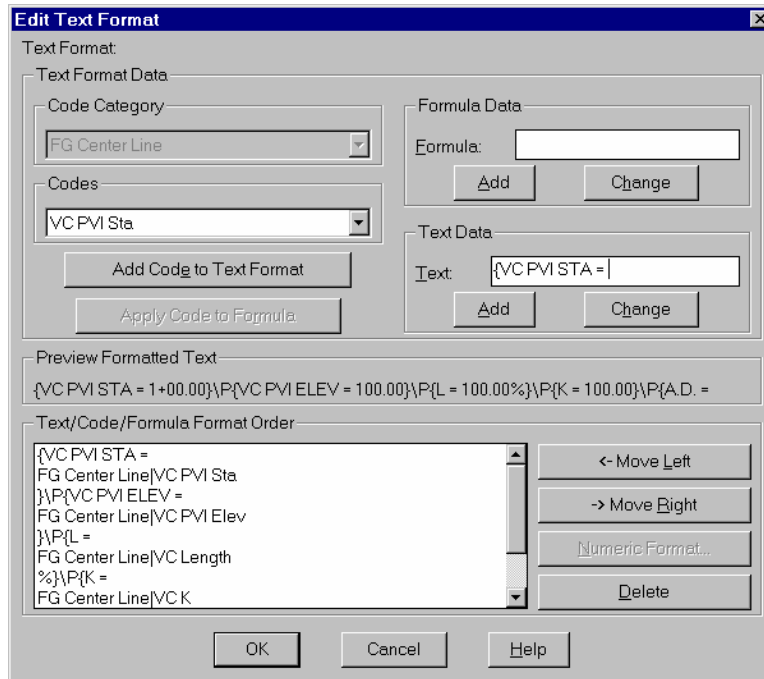
Figure 85: Edit Text Format dialog

q. Select **FG Center Line** for the Code Category. You can only use one code category for each text label.

r. Enter **{VC PVI Sta =** in the Text Data box and select the **Add** button. The text is added to the Text/Code/Formula Format Order window. The **{** and **}** brackets denote the start and end of an item.

s. Select **VC PVI Sta** from the Codes list and select the **Add Code to Text Format** button. The data is added to the Text/Code/Formula Format Order window.

t. Select **FG Center Line|VC PVI Sta** in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed.
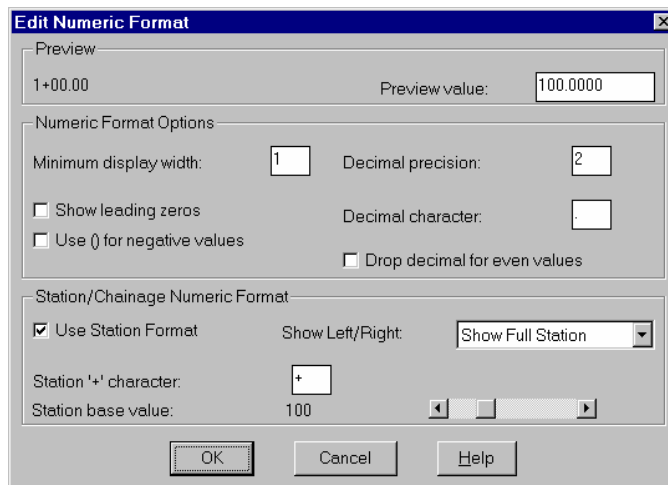

Figure 86: Edit Numeric Format dialog

u. Enter **2** for the Decimal Precision in the Numeric Format Options section.

v. Toggle **ON** the Use Station Format button in the Station/Chainage Numeric Format section.

w. Select **OK** to return to the Edit Text Format dialog.

x. Enter **}\p{VC PVI Elev =** in the Text Data box and select the **Add** button. The **\P** denotes a carriage return.

y. Select **VC PVI Elev** from the Codes list and select the **Add Code to Text Format** button.

z. Select **FG Center Line|VC PVI Elev** in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed

aa. Enter **2** for the Decimal Precision in the Numeric Format Options section.

Figure 87: Edit Text Format dialog

bb. Select **OK** to return to the Edit Text Format dialog.

cc. Enter **}\P{L =** in the Text Data box and select the **Add** button.

dd. Select **VC Length** from the Codes list and select the **Add Code to Text Format** button.

ee. Select **FG Center Line|VC Length** in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed

ff. Enter **2** for the Decimal Precision in the Numeric Format Options section.

gg. Select **OK** to return to the Edit Text Format dialog.

hh. Enter **}\P{K =** in the Text Data box and select the **Add** button.

ii. Select **VC K** from the Codes list and select the **Add Code to text Format** button.

jj. Select **FG Center Line|VC K** in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed

kk. Enter **2** for the Decimal Precision in the Numeric Format Options section.

ll. Select **OK** to return to the Edit Text Format dialog.

mm.   Enter **}\P{A.D. =** in the Text Data box and select the **Add** button.

nn. Select **VC A.D.** from the Codes list and select the **Add Code to Text Format** button.

oo. Select **FG Center Line|VC A.D.** in the Text/Code/Formula Format Order window and select the **Numeric Format…** button. The Edit Numeric Format dialog is displayed

pp. Enter **2** for the Decimal Precision in the Numeric Format Options section.

qq. Select **OK** to return to the Edit Text Format dialog.

rr. Enter **%}** in the Text Data box and select the **Add** button. Notice the preview displayed in the Preview Formatted Text section.
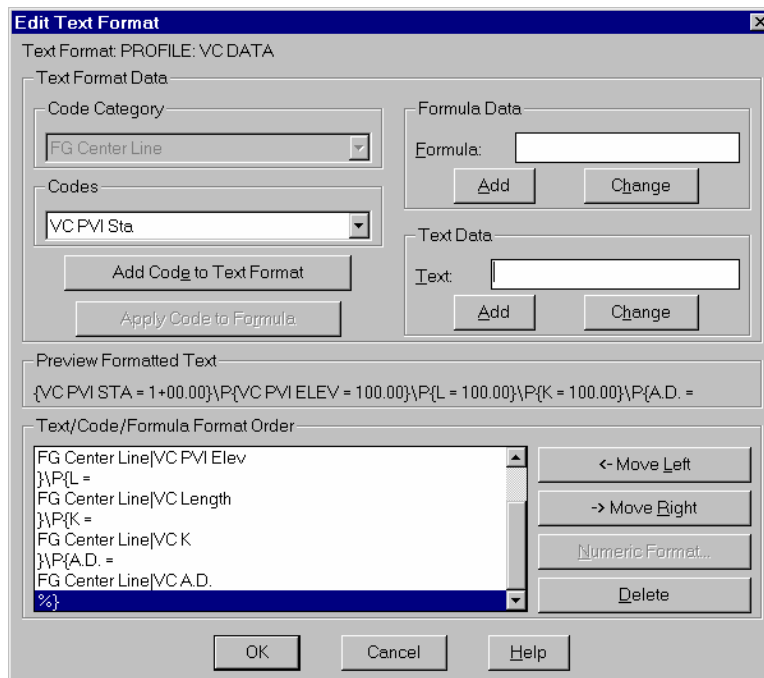

Figure 88: Edit Text Format dialog

ss. Select **OK** to exit the Edit Text Format dialog.

tt. Select **OK** to exit the Text Label Properties dialog.

uu. Select **OK** to exit the Select Style dialog.

vv. Select **OK** to exit the Distance Styles Properties dialog.

ww.   Select **OK** to exit the Select Style dialog and return to the drawing. The Vertical Curve Data label has now been created but not yet added to the Profile Label frame.

xx. Select **Create/Edit Frame** from Sheet Styles on the Sheet Manager menu and select the Profile frame. The Edit Frame Data dialog is displayed.

yy. Select the **Distance** button. The Edit Attached Distance Labels dialog is displayed.

zz. Select the **Add** button. The Select Style dialog is displayed.
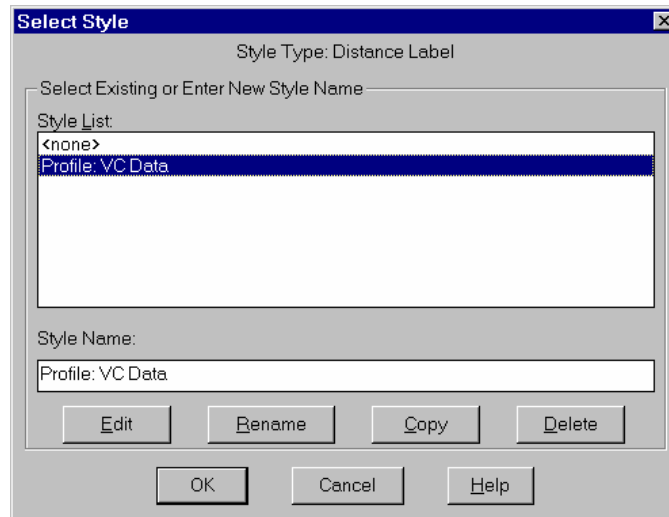
Figure 89: Select Style dialog

aaa.   Select **Profile: VC Data** from the Style List and select **OK** to return to the Edit Attached Distance labels dialog.
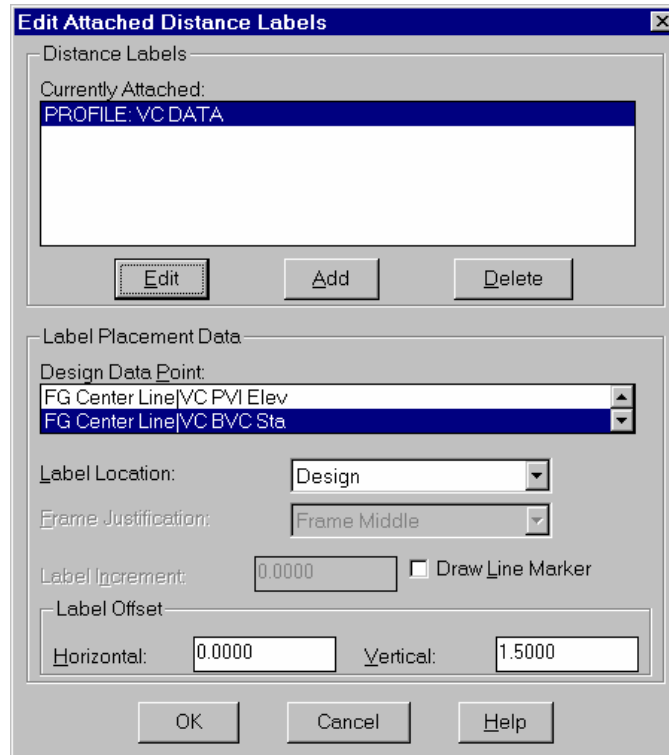
Figure 90: Edit Attached Distance Labels dialog

bbb.   Select **FG Center Line|VC BVC Sta** as the Design Data Point. This is the point the distance label begins.

ccc.   Enter **1.5000** in the Vertical: box in the Label Offset section.

ddd.   Select **OK** to exit the Edit Attached Distance Labels dialog.

eee.   Select **OK** to exit the Edit Frame Data dialog and return to the drawing.

fff. **Save** the drawing.

Saving the Sheet Style

Now that the plan and profile viewports are defined and the labeling is attached, we can save the settings you specified as a named sheet style. The files associated with each sheet style can be stored on local or network drives. When stored on a network drive, they can be easily maintained as standards available to the entire technical staff.

a. Adjust your drawing to display only the layers necessary for saving the sheet style. It is not necessary that the FRAME layer be displayed to be included in the sheet style definition.

b. Select **Save Sheet Style** from Sheet Styles on the Sheet Manager menu.

c. Enter **PP_20** for the file name and select **Save**.

d. When prompted at the command line for the sheet type, press **<Enter>** to accept the default style **Planprof**.

Creating and Editing a Sheet Series Layout

Several steps must be completed prior to generating a series of plan/profile sheets. You must first set the current alignment and profile to be associated with the sheet series. You then create and edit the sheet series layout in the plan view of your base drawing. Once created, the sheet series can be loaded, edited, and plotted from any drawing attached to the project.

Set the Current Alignment and Profile.

    a.   Select the **Set Current Alignment** command from the Alignments menu and press **Enter** to display the Alignment Librarian dialog.
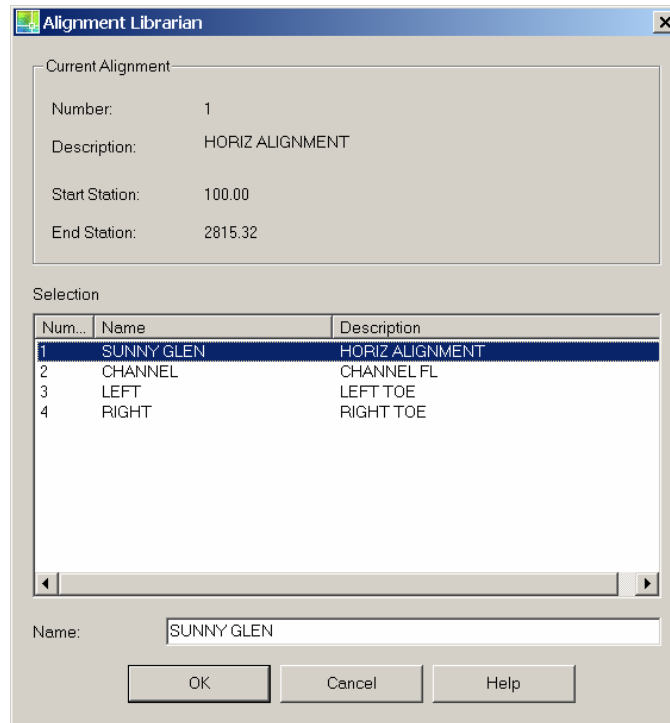

Figure 91: Alignment Librarian dialog

    b.   Select **Sunny Glen** as the current alignment.

    c.   Select **OK** to return to the drawing.

    d.   Select the **Set Current Profile** command from the Profiles menu and select a point within the profile. Confirmation of your selection will be displayed on the command line.
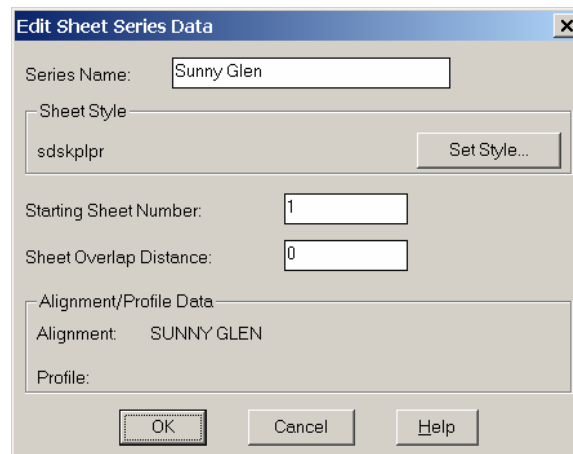
Create the Sheet Series Layout

a. Select **Layout Sheet Series** from Plan/Profile Sheets on the Sheet Manager menu. The Set Current Sheet Series Name dialog is displayed.
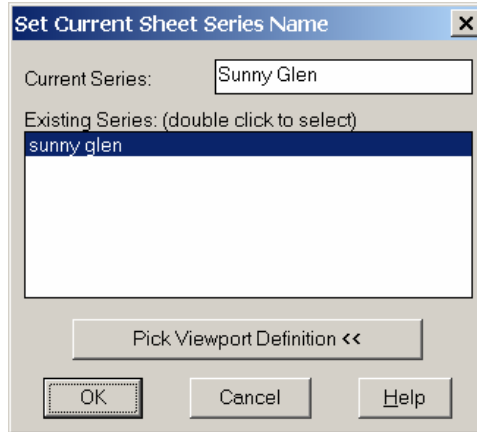
Figure 92: Set Current Sheet Series Name dialog

b. Enter **Sunny Glen** for the current series and select **OK**. The Edit Sheet Series Data dialog is displayed.

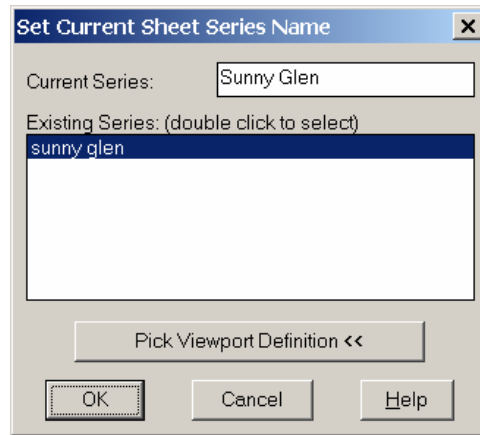**Figure 93: Edit Sheet Series Data dialog**

c. Select the **Set Style…** button. The Select Current Sheet Style dialog is displayed.

d. Select the **PP_20** sheet style and select the Open button. This will return you to the Edit Sheet Series Data dialog and the selected sheet style should be displayed.

e. Select **OK**. The sheet layout frames will appear in the plan. (These are NOT frames like the ones that defined our sheet style.)

f. **Save** the drawing.

Edit the Sheet Layout

    a.   Select **Edit Sheet Layout** from Plan/Profile Sheets on the Sheet Manager menu.

    b.   Press **<Enter>** to display the Set Current Sheet Series dialog.

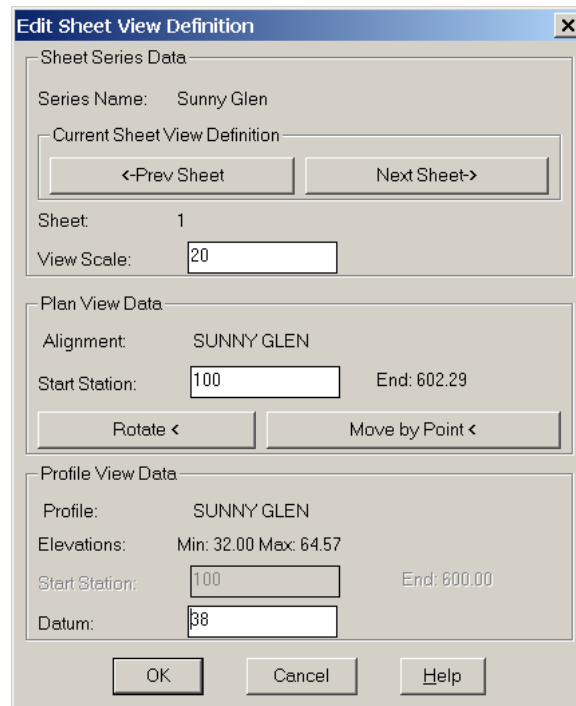   NOTE: You can select the sheet layout frame directly and proceed to Step 4e.

    c.   Select **Sunny Glen** and **OK**.

Figure 94: Set Current Sheet Series Name dialog

    d.   Type **1** at the command line and press **Enter** to edit the sheet layout frame for sheet 1. The Edit Sheet Definition dialog will display.


Figure 95: Edit Sheet View Definition dialog

e.   Check that the Start Station in Plan View Data is correct.

f.   Change the Datum elevation to a value appropriate for your profile. This elevation will be the minimum grid elevation displayed on the finished plan/profile sheet. Leave sufficient room at the bottom of the profile to display the storm sewer system.

g.   Select **OK** to save the changes to the sheet view definition. *(HINT: Selecting OK exits this dialog. You can make the desired changes, press <**Enter**> to accept the changes, and then select the **Next Sheet** or **Previous Sheet** button to edit the next Sheet Layout frame rather than exiting after edited each frame.)*

h.   **Save** the drawing.

Generate and Load the Sheet Series

a. Select **Generate Sheet – Series** from Plan/Profile Sheets on the Sheet Manager menu. The Set Current Sheet Series Name dialog is displayed.
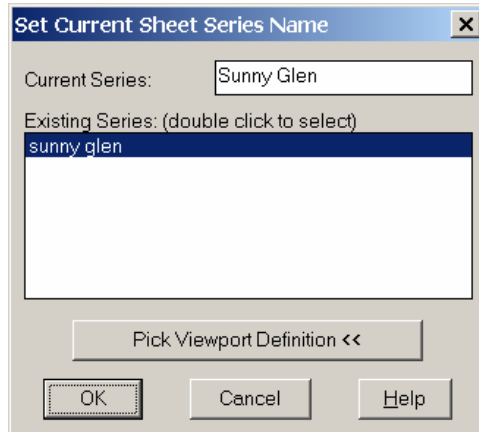
Figure 96: Set Current Sheet Series Name dialog

b. Select **Sunny Glen** and **OK**. The sheet series will now generate with the last sheet in the series displayed on a layout named **Sheet_Manager**. The files associated with this sheet series are stored in *d:/Land Projects 2005/<project name>/cd/data/sunny glen*.

c. **Save** the drawing.

d. Select **Load Sheet – Series** from Plan/Profile Sheets on the Sheet Manager menu. (This will load the entire sheet series into the current drawing. Select **Load Sheet – Individual** from Plan/Profile Sheets on the Sheet Manager menu to load individual sheets from the series.) The Set Current Sheet Series Name dialog will be displayed.

e. Select **Sunny Glen** and **OK**. The sheet series will now load into the current drawing. Each sheet is placed on a layout. The layout names will be the sheet series name (Sunny Glen) plus the filename of the sheet. (Example: Sunny Glen+S001) The maximum number of layouts per drawing is 255.