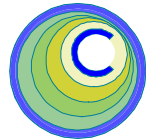


The CEDRA Corporation's COMMAND OF THE MONTH

A monthly information bulletin

September 2005

FEATURED COMMAND
Enhancements to the
Annotation Tools



Application Description

In this year's May issue, we addressed CEDRA's methodology for creating and manipulating the annotation of features. Since that time, within the ArcGIS implementation of our software, two tool bars have been expanded to enhance the annotation capabilities and ease the manipulation of annotation. These two toolbars now contain a total of eight tools, whereas before, they only contained two.


It is noted that prior to these enhancements, certain of these eight tools did exist in the form of choice list options within the *Rotate, Translate and Scale* command. As a result of these enhancements, these choice list options are still available within the *Rotate, Translate and Scale* command, but in addition, they are also available in the toolbars. The reason for the duplicity is to provide the user with distinct toolbars for text manipulation.

The CEDRA-Transform-Tools Toolbar

The CEDRA-Transform-Tools toolbar is shown in Figure 1, and as can be seen, it is comprised of two tools.



Figure 1
CEDRA-Transform-Tools Toolbar

- The *Rotate, Translate and Scale*  tool which operates in an identical manner with that of the same


icon in the Utilities toolbar at the bottom of the CEDRA Tool Palette.

This tool appears in this toolbar for those users that choose not to display said palette in an effort to gain working screen real estate.

Although certain of the choice options presented by this command may be used to manipulate annotation features or text strings, its main use is in the reorientation or transformation of groups of points, lines, curves and text. The user is referred to the User's manual, or to the on-line help. Because of the many options available to this command, one or more issues may be dedicated to it in the future.

Command Of The Month bulletin

This month's issue presents recent enhancements made to the process of manipulating annotation strings.

- The *Rotate, Translate and Scale w/o Baseline*  tool which operates identically as the Translate, Rotate, Scale Features option which appears in the mode of operation choice list presented by the *Rotate, Translate and Scale* tool.

This new tool has been placed in this toolbar to reduce the number of clicks when working with text transformations. Usually, a user will relocate several text strings during a sequence of operations.

Although this command may be used on any feature type, the description of its use presented later on in this issue pertains only to text strings.

The CEDRA-Text-Tools Toolbar

The CEDRA-Text-Tools toolbar is shown in Figure 2, and is comprised of the following six tools:

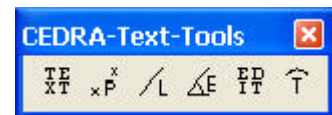




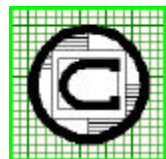
Figure 2
CEDRA-Text-Tools Toolbar

- The *Create a text string*  tool operates in an identical manner with that of the same icon located in the Utilities toolbar at the bottom of the CEDRA Tool Palette.

This command enables the user to create a new text string of a specific font size and position the text at a predefined location. Its use is demonstrated later on in this issue.

- The *Set Graphic Text Angle (2 Pts)*  tool is new, yet, it operates in an identical manner with the Set Graphic Text Angle (2 Pts) option which appears in the mode of operation choice list presented by the *Rotate, Translate and Scale* tool.

This command enables the user to select an existing text string, and center it between two points, each



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defined by a “pick”. Its use is demonstrated later on in this issue.

- The *Set Graphic Text Angle (Pick Line)*  tool is new, yet, it operates in an identical manner with the Set Graphic Text Angle (Pick Line) option which appears in the mode of operation choice list presented by the *Rotate, Translate and Scale* tool.

This command enables the user to select an existing text string, and center it along a user selected line. Its use is demonstrated later on in this issue.

- The *Set Graphic Text Angle (Explicit)*  tool is new, yet, it operates in an identical manner with the Set Graphic Text Angle (Explicit) option which appears in the mode of operation choice list presented by the *Rotate, Translate and Scale* tool.

This command enables the user to select an existing text string, and orient it in a specific direction by pivoting it about its low left corner. Its use is demonstrated later on in this issue.

- The *Edit a text string*  tool is totally new.

This command enables the user to select an existing text string, and change its textual content. Its use is demonstrated later on in this issue.

- The *Curved Text*  tool is totally new.

This command enables the user to select an existing text string, and position it along a user selected curve (polyline). Its use is demonstrated later on in this issue.

The 2005 May issue described the various methods of mass annotation, and individual text string creation, as well as, text string manipulation. The new

reader and novice user may wish to peruse that issue for memory refreshing prior to continuing with this issue. The intent of the examples below are to demonstrate the use of the tools identified above. Since these tools do not affect the mass annotation capabilities, the examples, presented below, concentrate on the creation of distinct text strings and manipulation thereof.

In perusing the text below, it is recommended that the reader opens a new or existing map document. Afterwards, it is recommended that the CEDRA Tool Palette be displayed. Some of the geometric tools in the palette will be used to create point, line and curve features, which will be referenced in the exercises.

Once the map display has been set and the palette made visible, use any of the available CEDRA tools to create two points, and join them with a line (see Figure 3). Note the following:

- 1 Position the two points at a 45° Cartesian direction, and say 200 feet (meters) apart, and
- 2 Draw the line from the low left point towards the upper right point as shown in Figure 3. Remember that the direction of this line is from the low left point (Pt. 1) towards the upper right point (Pt. 2).

You may want to zoom in a bit, but be mindful to leave some blank space around the two points and the line.

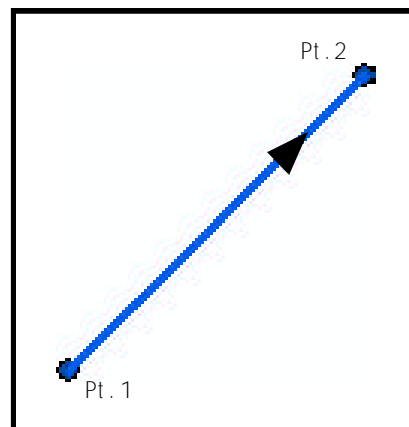


Figure 3 - Working Points And Line

Creating New Text Strings

We will first create text strings at user specified locations in the map.


- 1 Click at the *Create a text string*  tool, and then click anywhere in the map display area, to display the dialog box of Figure 4.



Figure 4
Create Text String Dialog Box

- 2 Enter SAMPLE TEXT STRING in the data field to the right of the label Text String: after which, scroll down in the:
 - *Text Style:* choice data field, and select the *Normal* option.
 - *Text Positioning:* choice data field, and select the *Positioned at Pick* option, followed by: clicking at the *OK* button to create the text string.

Note that the last entered data will be remembered for the next use of this command.

Furthermore, if this is the first text string that is being created for the current active layer, the user will be prompted to confirm the name of the Personal GeoDatabase (PGD) to be created. Additionally, the user will need to make sure that the False X and False Y values are properly defined for the PGD. The reader is referred to the 2005 May issue for more information pertaining to *Determining the False X and Y coordinates*.

Once the PGD has been established, the tool will display an annotation feature whose low left corner is located at the coordinates of the pick made in Step 1.

- 3 Click at the *Edit* menu and select the *Undo Create Text String* to delete the text that was created.

This step demonstrates that text created with this tool can be “undone”. So that, if the text size or font is not as desired, the text can be deleted and the command repeated.

Note, in performing the steps below the intent is to create six text strings or annotation features positioned as shown in Figure 5. Depending upon the coordinate system of the map being used, the annotation offset values, identified below, may or may not be appropriate. If an annotation feature does not appear as expected, that is, as shown in Figure 5, click at the *Edit* menu and select the *Undo Create Text String* to delete the text and then repeat the step specifying a different annotation offset value.

- 4 Click at or near the upper right point (Pt. 2 in Figure 3), to display the dialog box of Figure 4.
- 5 Enter in the indicated data fields the following data:
- | | |
|---------------------------|----------|
| <i>Text Size:</i> | 5 |
| <i>Text Angle:</i> | 0 |
| <i>Annotation Offset:</i> | 0 |
| <i>Text String:</i> | SAMPLE A |
- 6 Scroll down in the:
- Text Style:* choice data field, and select the option *Italic*.
- 7 Click at the *OK* button to create the text string.
- 8 Click at or near the low left point (Pt. 1 in Figure 3), to display the dialog box of Figure 4, in which, enter the following in the indicated data fields:
- | | |
|---------------------|----------|
| <i>Text Angle:</i> | 90 |
| <i>Text String:</i> | SAMPLE B |
- 9 Click at the *OK* button to create the text string.

We will now create a text string such that it is centered between two points.

- 10 Click first at or near the low left point (Pt. 1 in Figure 3) to display the dialog box of Figure 4, in which:

- Enter the following in the indicated data fields:

<i>Text Angle:</i>	0
<i>Annotation Offset:</i>	15
<i>Text String:</i>	SAMPLE C

- Scroll down in the *Text Positioning:* choice data field, and select the *Centered about 2 Points* option,

and then click at the *OK* button

- 11 Click at or near the upper right point (Pt. 2 in Figure 3) to display the text.

We will now repeat the last two steps, but in the process we will reverse the direction of the point picking.

- 12 Click first at or near the upper right point (Pt. 2 in Figure 3) to display the dialog box of Figure 4, in which, enter the following in the indicated data fields:

<i>Annotation Offset:</i>	25
<i>Text String:</i>	SAMPLE D

- 13 Click at or near the low left point (Pt. 1 in Figure 3) to display the text.

We will now create a text string such that it is centered about the line that we created at the start of this exercise. Remember that the direction of this line is from the low left to the upper right point.

- 14 Click on top of the line to display the dialog box of Figure 4, in which:

- Enter the following in the indicated data fields:

<i>Annotation Offset:</i>	5
<i>Text String:</i>	SAMPLE E

- Scroll down in the *Text Positioning:* choice data field, and select the *Centered about a Line* option,

and then click at the *OK* button to display the conventional feature verification message box for the selected line.

- 15 Click at the *Yes* button to confirm the feature selection, after which, the text will be displayed.

- 16 Click on top of the line to display the dialog box of Figure 4, in which, enter the following in the indicated data fields:

<i>Annotation Offset:</i>	-5
<i>Text String:</i>	SAMPLE F

- 17 Click at the *OK* button and then click the *Yes* button to confirm the feature selection, after which, the text string will be displayed.

Shown in Figure 5 are the six strings which were created as a result of the above steps. Note the following:

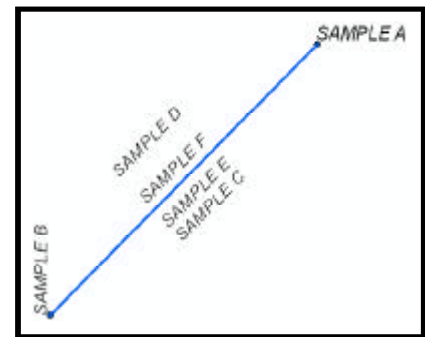


Figure 5 Creating Text Annotation

- The text angle pertains only to text annotated at a specific point.
- The annotation offset pertains only to text annotated along a line, or between two points.
- A positive offset places the annotation to the right of the direction of the line, while a negative offset places the annotation to the left.

Center Existing Text Between 2 Points

We will now proceed to relocate certain of the text strings that were created above, but before we do that, we should save the work done so far. Thus,

- Click at the Editor menu,
- Select the Stop Editing option, and
- Click at the Yes button.

Next, let us create a point (Pt. 3) to be located due west from the upper right point (Pt. 2), after which, we will project it upon the line that was previously created to establish Pt. 4, see Figure 6. The distance between Pt. 2 and Pt. 3 will be approximately one half the distance between Pt. 1 and Pt. 2. Following this, we will create a line normal to the existing line by connecting Pt. 3 and Pt. 4.

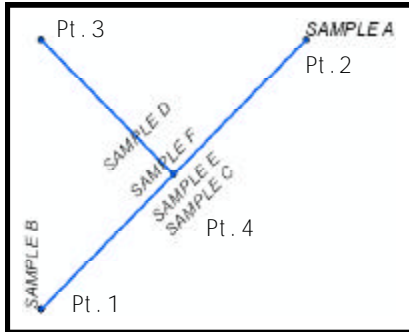





Figure 6 Prepare For Text Relocation


To determine the distance between Pt. 1 and Pt. 2, use the Echo 1  tool, *Echo direction and distance between 2 points*. As such, do the following:

- Click at the Echo 1  tool.
- Click on top of Pt. 1.
- Click on top of Pt. 2.
- Make a mental note of the value which appears to the right of the *Length =* label. Click at the *OK* button to dismiss the dialog box.


To establish Pt. 3, do the following:

- Click at the Point 3  tool, *Points w/ direction and distance from a base point*.
- Click on top of Pt. 2.
- Click at the *Yes* button to confirm.
- Enter -xxxx in the *Distance:* data field, where xxxx is approximately one half the distance between Pt. 1 and Pt. 2, and then click at the *OK* button. The minus sign (-) charac-

ter denotes that the point should be created to the left of Pt 2.

- If prompted, click at the *Cancel* button to terminate the command.
- Click at the Point 5  tool, *Project a point on a line or curve feature*.
- Click at the existing line to display the conventional feature confirmation query box, and then click the *Yes* button to confirm the selection.
- Click at or near Pt. 3 to project it upon the selected line.

Now create the normal line by:


- Clicking at the Line 1  tool, then
- Click on top of Pt. 3.
- Click on top of Pt. 4.

Now we proceed with the relocation of the existing text strings using the second, third and fourth, from the left, tools of the CEDRA-Text-Tools toolbar.

Note that in positioning a text string: (a) between two points or (b) along a line, the CEDRA tools utilize an offset distance value. This value is defined by the setting of the *Annotation Offset:* parameter within the [Change Text Properties] command under the Text Properties commands combo box. Hence:

- Scroll down in the *Text Properties commands* combo box, select the *Change Text Properties* command, and in the dialog box enter -5 in the *Annotation Offset:* data field, followed by clicking the *OK* button.


Now let us proceed with the annotation relocation tools using the annotation offset value defined above.

- 1 Click at the *Set Graphic Text Angle (2 Pts)*  tool, and then click at the *SAMPLE D* text string to highlight it, and display the conventional feature confirmation query box.

- 2 Click at the *Yes* button to confirm, and then click on top of Pt. 3, and then click on top of Pt. 2. The text string is relocated to the left (above) of the implied line between the two selected points in accord with their sequence of selection. The command is still active.
- 3 Click at the *SAMPLE F* text string to highlight it, and display the conventional feature confirmation query box.
- 4 Click at the *Yes* button to confirm, and then click on top of Pt. 2 and then click on top of Pt. 3. The text string is relocated to the left (below) of the implied line between the two selected points in accord with their sequence of selection. The command is still active. We may continue with relocating additional text strings, but we get the idea, and we decide to say this is enough.

Center Existing Text Along A Line

We will now do basically do the same thing, but instead of positioning a text string between two points, we will position them along a line, maintaining the same offset distance. So:

- 1 Click at the *Set Graphic Text Angle (Pick Line)*  tool, then click at the *SAMPLE E* text string to highlight it, and display the conventional feature confirmation query box.
- 2 Click at the *Yes* button to confirm, and then click on top of the normal line recently created to highlight it and display the conventional feature confirmation query box. Click at the *Yes* button to confirm. The text string is relocated to the left of the last said line.

The command is still active, but this time we will change the sign of the annotation offset distance.


- 3 Scroll down at the *Text Properties commands* combo box, select the

Change Text properties command, and in the displayed dialog box enter 5 in the *Annotation Offset:* data field, followed by clicking the *OK* button.

- 4 Click at the *SAMPLE C* text string to highlight it, and display the conventional feature confirmation query box.
- 5 Click at the *Yes* button to confirm, and then click on top of the normal line recently created to highlight it and display the conventional feature confirmation query box. Click at the *Yes* button to confirm. The text string is relocated to the right of the last said line. The command is still active. We may continue with relocating additional text strings, but we get the idea, and we decide to say this is enough.

Orient Existing Text Along A Direction

Again we will basically do the same thing, but this time we will specify the direction of the string. So:

- 1 Click at the *Set Graphic Text Angle (Explicit)*  tool, and then click at the *SAMPLE B* text string to highlight it, and display the conventional feature confirmation query box.
- 2 Click at the *Yes* button confirm, and display the dialog box of Figure 7.

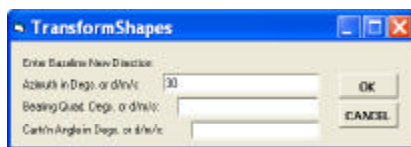


Figure 7 - Text Direction Dialog Box

- 3 Enter 30 in the *Azimuth in Degs. or d/m/s:* data field, followed by clicking the *OK* button.

We will repeat the same command, which is still active, to reorient another text string.

- 4 Click at the *SAMPLE A* text string to highlight it, and display the conventional feature confirmation query box.
- 5 Click at the *Yes* button confirm, and display the dialog box of Figure 7.
- 6 Enter 0 in the *Azimuth in Degs. or d/m/s:* data field, followed by clicking the *OK* button.

Reference is made to Figure 8 to see the results of the above steps.

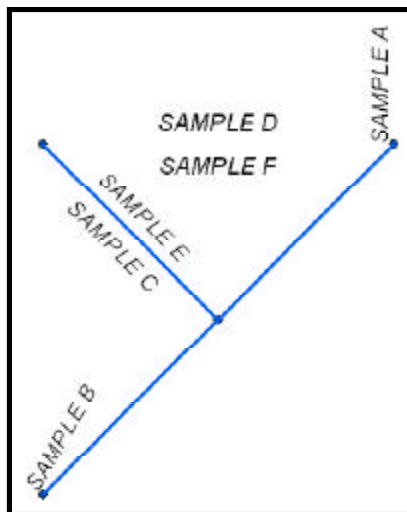




Figure 8 - Relocated Text

Translate and/or Rotate A Text String

In the one before the last exercise above, we relocated the *SAMPLE B* text string. We now decide that we do not like its position, and that we would rather have it (a) higher by 20 feet, (b) to the left by 25 feet, and (c) rotated 10° degrees counterclockwise. To do that, we must first select the text string to be processed.

- 1 Use any of the available means to select the feature. For example, click at the Relocation 1  tool, *Move endpoint or keynode of a feature*, and then click at the *SAMPLE B* text string to highlight it, and display the conventional feature query box.
- 2 Click at the *Yes* button, and then click at the *Rotate, Translate and*

Scale w/o Baseline  tool to display the dialog box of Figure 9.

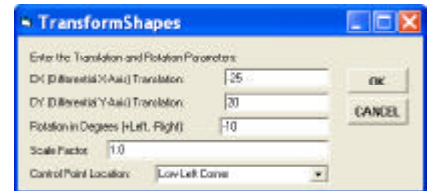


Figure 9 Transformation Dialog Box

- 3 Enter the following data in the indicated data fields:
 DX (Differential X-Axis) -25
 DY (Differential Y-Axis) 20
 Rotation in degrees 10
 and then click at the *OK* button to shift and rotate the text.

The text is translated and rotated, the command is still active with the dialog box of Figure 9 still displayed, and we are not happy with the transformation.

- 4 Enter the following data in the indicated data fields:
 DX (Differential X-Axis) 10
 DY (Differential Y-Axis) -10
 Rotation in degrees 10
 and then click at the *OK* button to shift and rotate the text.

The text is transformed, the command is still active with the dialog box of Figure 9 still displayed, and we are still not happy with the new location of the text string.

- 5 Click at the *OK* button to transform the text maintaining the same data as before; and lo and behold we proclaim ourselves happy with the results (good enough for canal work as they used to say). The results may be seen in Figure 10.

As it was noticed in the above exercise, the user had the opportunity to also reduce or increase the size of the text by a user specified percentage. In addition, by scrolling down in the *Control Point Location:* data field, the user

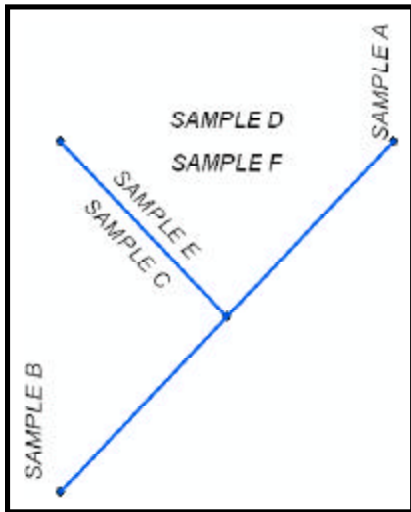


Figure 10 - Shifted And Rotated Text


has control about which text string corner the shift and/or rotation is to occur.

- 6 Since we are content with the results, we can now click at the *Cancel* button to terminate the command.

If we would like to transform another text string, we simply repeat the same process from Step 1 above.

Edit or Change A Text String

In reviewing the work we have done so far, we decide that we do not quite like the text string descriptions of *SAMPLE A* to *SAMPLE F*, and we would like to change them to *TEXT A* to *TEXT F* respectively. To do this:

- 1 Click at the *Edit a text string*  tool, and then click at the *SAMPLE A* text string to highlight it, and display the conventional feature confirmation query box.
- 2 Click at *Yes* button to confirm the text selection, and display the dialog box of Figure 11.
- 3 Enter in the *Text String:* data field *TEXT A*, and then click at the *OK* button to make the editing change.

The command remains active.

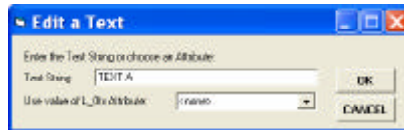


Figure 11 - Text Editing Dialog Box

- 4 Click at another text string, confirm the selection to display the dialog box of Figure 11, enter in the *Text String:* data field the desired text string, and then click at the *OK* button to make the editing change.

NOTE: Since the word *SAMPLE* was to be changed to *TEXT* in more than one text string, we could, before clicking the *OK* button in Step 3, highlight the word *TEXT* in the *Text String:* data field, and while holding down the keyboard control key (CTRL), click the keyboard *c* key to copy the text into the clipboard for future use. Then in Step 4, we could hold down the keyboard control key (CTRL) and click the keyboard *v* key to paste it into the same data field.

- 5 Repeat Step 4 as many times as necessary.


In reviewing Figure 11, the reader will notice the label *Use value of L_Otx Attribute:* which appears to the left of the second data field. When selecting an annotation feature to be edited, the tool tries to find a line feature in addition to an annotation feature.

If only an annotation feature can be found, the command will display the name of the layer that the annotation feature resides in within the label and in the drop-down choice list, all of the attributes in the annotation layer.

If a line feature can be found, in addition to an annotation feature, the command will display the name of the layer that the line feature resides in within the label and in the drop-down choice list, all of the attributes in the line layer.


In editing a text string, the user can scroll down in this data field, select any of the

desired attributes that are displayed, and have it assigned to the text string that is being edited.

For example, the user has displayed on the map a street centerline layer and an annotation layer containing the street names. Within the street centerline layer is a field called *ST_NAME* which contains the street name. The user wishes to assign the *ST_NAME* value to an existing annotation feature. Using the *Edit a text string*  tool, the user can make a “pick” such that the tool will find both the existing annotation feature and the appropriate line feature. Afterwards, the user can then select the *ST_NAME* attribute from the drop-down choice list.

Position A Text String Along A Curve

As we approach the end of this issue, it is apropos to address the positioning of a text string along a curve or polyline. For this exercise, we will create two curves, one progressing in a counter-clockwise rotation, and the other in a clockwise rotation.

- 1 Click at the *Tangent Curve*  tool, *Arc of given radius tangent to 2 lines.*
- 2 Click a bit to the left of the line connecting Pt.1 and Pt. 2, (see Figure 12) to denote that the curve to be created will be to the left of this line, and then click at the *Yes* button of

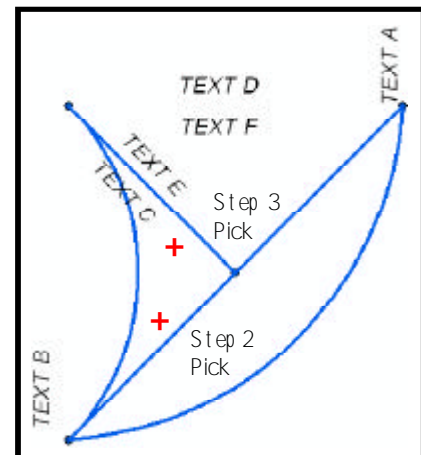


Figure 12 - Curves For Annotation


the displayed feature confirmation query box.

- 3 Click a bit below the line connecting Pt. 3 and Pt. 4, (see Figure 12) to denote that the curve to be created will be below and to the left of this line, and then click at the *Yes* button of the displayed feature confirmation query box.
- 4 In the displayed dialog box, enter 100 in the *Curve Radius:* data field as the radius of the curve to be created, accept all other defaults, and then click at the *OK* button to display the curve.

The curve that was created is shown in Figure 12.

Note, depending upon the coordinate system, a different radius value may need to be specified. If the curve that is created is not large enough, “undo” the curve and repeat the step using a larger radius value.


The second curve to be created requires the direct entry of a radius value. To accomplish this, the *Enter Distance by:* property within the [AVcad Properties] command under the CEDRA commands combo box needs to be set. Hence:

- Scroll down in the *CEDRA commands* combo box, select the *AVcad Properties* command, and in the choice list for the *Enter Distance by:* property, select the *Direct Entry* option, followed by clicking the *OK* button.
- 5 Click at the Curve  tool *Circular arc given radius and 2 points*.
 - 6 Referencing Figure 6, click on top of the Pt. 2 point, and then click on top of the Pt. 1 point to display the dialog box.
 - 7 In the displayed dialog box enter 150 in the *Enter Curve Radius:* data field as the radius of the curve to

be created, accept all other defaults, and then click at the *OK* button, to display the curve and a query box whether to create the 360° supplement arc or not.

- 8 Click at the *Yes* button to create the 360° supplement, and then click at the *No* button to terminate the command.

The curve that was created is shown in Figure 12. We will now reposition the annotation features to follow the curves.

- 9 Click at the *Curved Text*  tool, click at the *TEXT C* text string, and then click at the *Yes* button in the displayed query message box to confirm the selection.
- 10 Click at the first created curve, and then click at the *Yes* button in the displayed query message box to confirm the selection. The dialog box of Figure 13 is displayed.

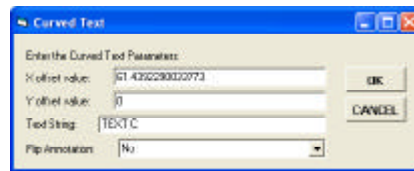


Figure 13 - Curved Text Dialog Box

- 11 Enter -4 in the *Y offset value:* data field, scroll down in the *Flip Annotation:* data field, select the *Yes* option, and then click at the *OK* button to relocate the text string. The dialog box is still displayed.
- 12 Enter 50 in the *X offset value:* data field, and then click at the *OK* button to relocate the text string. Note that the dialog box is still displayed.
- 13 Enter 60 in the *X offset value:* data field, and then click at the *OK* button to relocate the text string. Note that the dialog box is still displayed.
- 14 Click at the *Cancel* button to terminate the repositioning of the annotation feature.

The command is still active to process another annotation feature.

- 15 Repeat the above steps from Step 11, but this time select the *TEXT F* text string and the second curve, and this time use your desired data to relocate the string,. Refer to Figure 14.

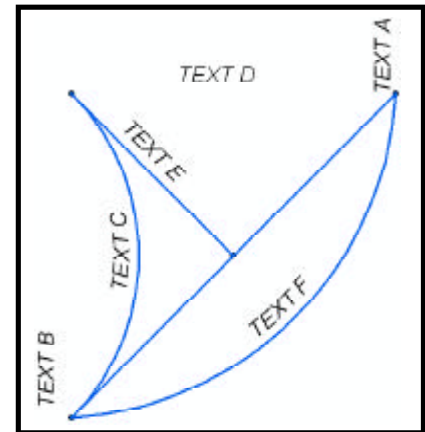


Figure 14 - Curved Text

Note that in relocating a text string, a provision is made to also edit the contents of the text string by entering the desired text in the *Text String:* data field. So that, the user can alter the text in addition to placing it along a curve.

Summary

It is believed that these two toolbars, with the recent enhancements, will greatly facilitate the manipulation of text strings in order to produce a nice looking final map drawing.

As always should there be any questions in how to use this toolbar, or recommendations in additional functionality that would be desirable, please let us know.

If you have a request for Command Of The Month, feel free to phone, fax or e-mail your request to The CEDRA Corporation.