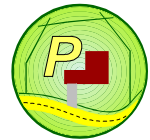


# The CEDRA Corporation's COMMAND OF THE MONTH

A monthly information bulletin

September 2011

FEATURED COMMAND  
Defining Tangent &  
Non-Tangent Curves




## Application Description

Everyone involved with parcel mapping has come across the situation of having to define a curve that appears in a legal description. Although it may seem straight forward, based upon the information that is available, curve definition can be a little tricky.


In this month's issue of Command of the Month, we address how a circular arc can be defined. This discussion will include tangent and non-tangent arcs.

## The CEDRA Solution

To address the application described above, the |Define Parcel| tool can be used. This tool is the left-most tool within the {CEDRA-AVparcel-Tools} toolbar, shown in Figure 1, as well as the {CEDRA-Deed-Tools} toolbar, shown in Figure 2. Depending upon the software package which the user has licensed, one or both of these toolbars may be present.

The |Define Parcel| tool, , can operate in a number of modes, within this issue we will only address the Transcribe Deed with Table mode of operation. When the source information consists of only a legal description (metes and bounds), this option provides the best solution for transcribing the deed.

## Define Parcel Overview

The |Define Parcel| tool, , enables the user to define parcels (polygons) and traverses (strings of features) in a variety of methods, five to be specific.

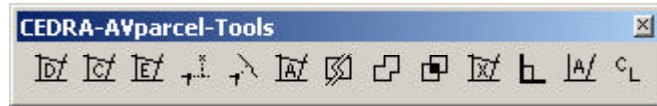


Figure 1  
CEDRA-AVparcel-Tools Toolbar

The user after activating the tool will select a seed element or a base point, which serves as the start point of the parcel/traverse.

After selection of the seed element or base point, the user selects from a choice list the desired mode of operation. Depending upon the selected mode of operation the operation of the tool varies. For the purpose of this publication, the Transcribe Deed with Table option will only be discussed.

### Command Of The Month bulletin

*This month's issue discusses how to define tangent and non-tangent curves using the Parcel and Traverse Course Entry Dialog Box.*

Following the selection of the mode of operation, the tool prompts the user for confirmation of the base point.

Upon confirmation of the base point, the user is prompted for a parcel or traverse identification value. This can be a numeric value or an alphanumeric string.

Following the specification of the parcel identification value, a dialog box appears from which the user can add

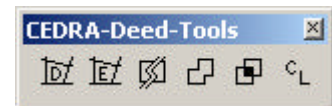


Figure 2  
CEDRA-Deed-Tools Toolbar

records or rows. These rows correspond to the number of courses comprising the parcel or traverse. If the parcel is comprised of five sides, the dialog box will contain five rows.

Within each row, the user enters information that defines a:

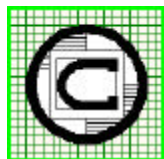
1. line course,
2. tangent curve, or
3. non-tangent curve.

The dialog box is structured with a number of columns with certain columns grouped to denote a:

1. line course,
2. tangent curve, or
3. non-tangent curve.

Based upon the type of course to be defined, the user enters in the appropriate columns the desired information.

Once all of the information has been entered, for all of the courses comprising the parcel or traverse, the OK button is selected. Depending upon whether or



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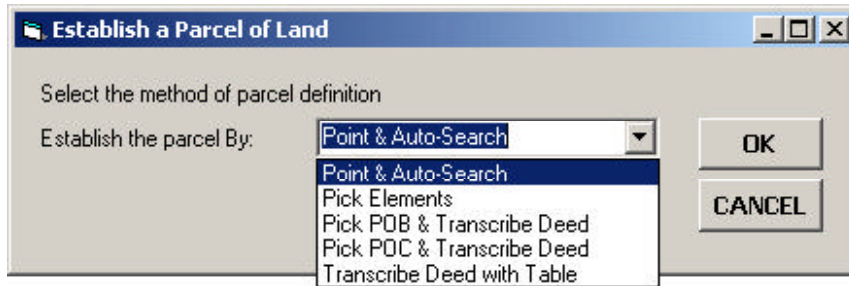


Figure 3  
Method of Parcel Definition Choice List

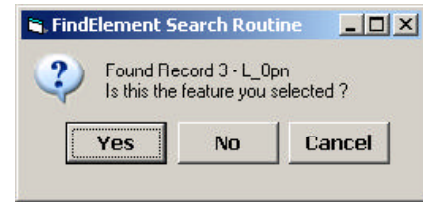



Figure 4  
Base Element Confirmation  
Query Box

not the parcel or traverse is closed, the mode of operation varies. The end result however will be the creation of features that are stored in the current active layer.

### Define Parcel Operation

To use this tool command, the user should:

- 1 Click at the  |Define Parcel| tool.
- 2 Click at the **start point** of the parcel/traverse, or of the tie-line, if there is a tie line, to display the choice list box of Figure 3.
- 3 Scroll down in the *Establish the traverse By:* data field, and **select the Transcribe Deed with Table** option.
- 4 Click at the **OK** button to confirm the selection, and display the *Yes/No/Cancel* confirmation query box of Figure 4 regarding the selected feature, or click at the **Cancel** button to abort the command.
- 5 Click at the **Yes** button to confirm the selection, and display the input dialog box of Figure 5 or 6, or click at the **No** button to select another nearby feature within the snapping tolerance, and display again the feature selection confirmation *Yes/No/Cancel* confir-

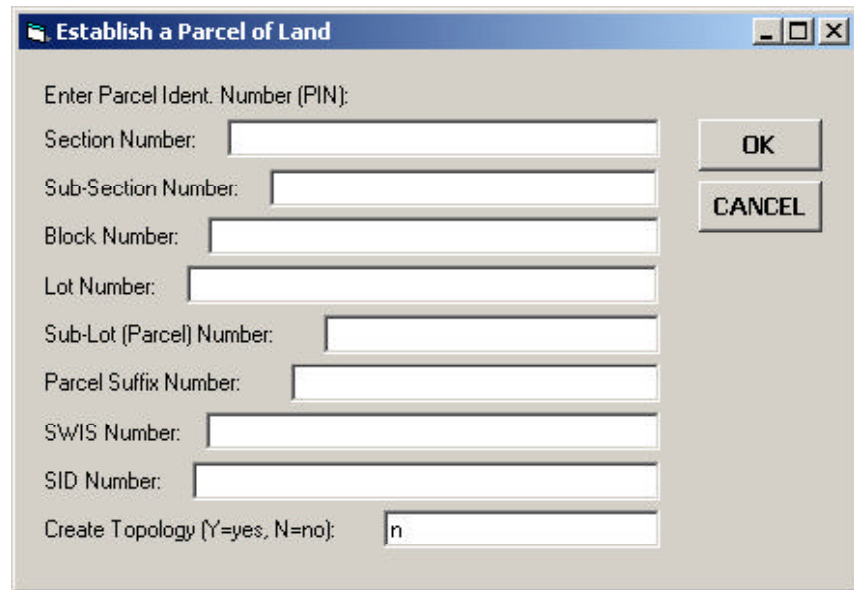


Figure 5  
New York State ORPS Parcel Identification Dialog Box

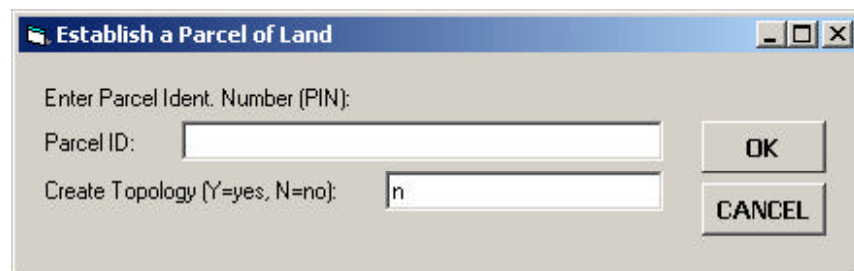


Figure 6  
Alphanumeric String Parcel Identification Dialog Box

mation query box of Figure 4, or click at the **Cancel** button to abort the command.

- 6 Depending upon the active PIN Format, the Parcel Identification dialog box will vary, as illustrated by Figures 5 and 6.

CEDRA-AVparcel users can control the active PIN Format by using the [Parcel ID Form] menu item within the {CEDRA-AVparcel-Menus} toolbar, see Figure 7. Upon selection of this menu item, the dialog box shown in Figure 8(a) is displayed from which the user can specify the

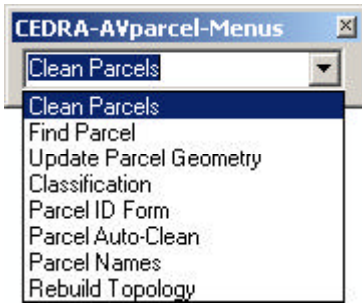


Figure 7  
CEDRA-AVparcel-Menus Toolbar

desired PIN Format. Shown in Figure 8(b) are the available PIN Formats. The active PIN Format is specified by either: (a) selecting from the drop-down list the desired PIN Format, or (b) entering a PIN File that contains the desired PIN Format. The PIN File name will supercede the choice list item, so that, if a choice list item is to be used, the user must enter a blank or space character for the Parcel PIN File parameter.

For the non-CEDRA-AVparcel users, the PIN.TXT file in the \cedra\avprjs folder can be modified using any word processor or text editor to specify the desired PIN Format. Note that there are comments within this file informing the user as to how the edits should be made.

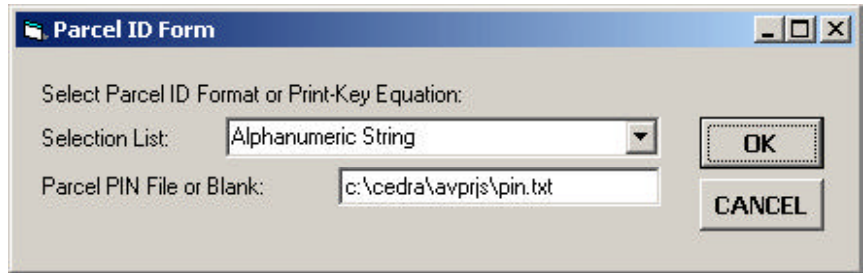


Figure 8(a)  
Parcel ID Form Dialog Box

**Enter** in the appropriate data field(s) the parcel/traverse **identification** value(s) and **Enter** either **Y** or **N** denoting if topology is to be created or not.

If the user is interested in creating only a polygon or just point, line and curve features, the user should specify N for the *Create Topology (Y=yes, N=no)*: parameter.

➤ **7** Click at the **OK** button to confirm the parcel identification entry, and continue with the operation by displaying the *Parcel and Traverse Course Entry Form* dialog box shown in Figure 9.

Note that if a line or curve feature is selected instead of a point feature, the coordinates of the se-

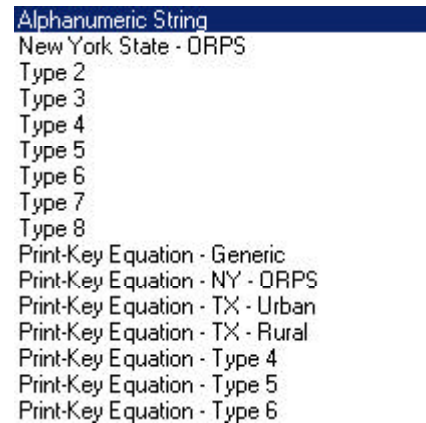


Figure 8(b)  
Available PIN Formats

lected feature's endpoint nearest to the point of where the selection click is made in Step 2 above become the coordinates of the starting point of the traverse.

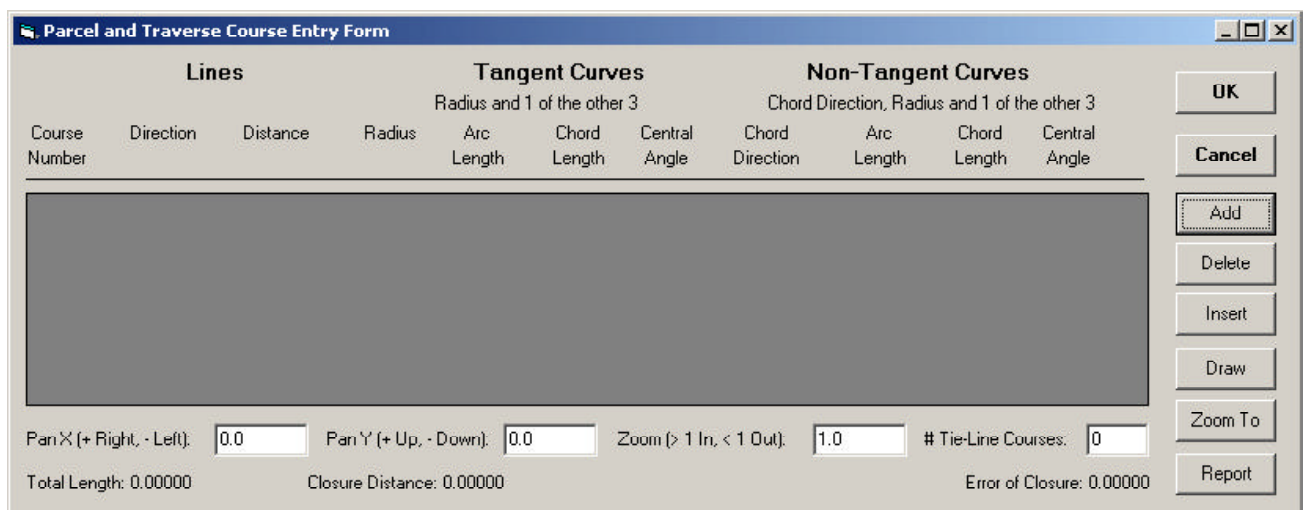


Figure 9  
Parcel and Traverse Course Entry Form - Initial Display

Lines			Tangent Curves				Non-Tangent Curves			
Course Number	Direction	Distance	Radius and 1 of the other 3			Chord Direction, Radius and 1 of the other 3				
			Radius	Arc Length	Chord Length	Central Angle	Chord Direction	Arc Length	Chord Length	Central Angle
1	100	500	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	190	500	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	250	0.0	0.0	90	0.0	0.0	0.0	0.0
4	200	250	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	390	750	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Pan X (+ Right, - Left): 0.0    Pan Y (+ Up, - Down): 0.0    Zoom (> 1 In, < 1 Out): 1.0    # Tie-Line Courses: 0  
 Total Length=2392.69908    Distance to Close=0.00000    DX=0.00000    DY=0.00000    SW 90 0 0.0    Parcel is Closed

Figure 10(a)  
Parcel and Traverse Course Entry Form defining 5 courses comprised of 4 lines and 1 curve

At this point, the user will initially add rows to the table using the Add button, after which, the appropriate data is entered in the various columns. The user is able to modify any of the entered data at any time during the parcel/traverse definition.

If courses are to be deleted or inserted the user will select the row, by clicking the appropriate row number under the Course Number column, followed by clicking the Delete or Insert button. Note that the Insert button inserts a row above the selected row, while the Delete button will remove the selected row from the dialog box..

Shown in Figure 10(a) is a sample parcel comprised of 5 courses with the third course representing a tangent circular arc. This sample was created by:

- **8a Clicking** at the **Add** button five times.
- **8b Entering** the values in the appropriate columns.

Shown in Figure 10(b) is the graphic display of the parcel.

As the user enters data in the dialog box, the user can either: (a) depress the Enter key on the keyboard or (b) click the Draw button to display a graphic representa-

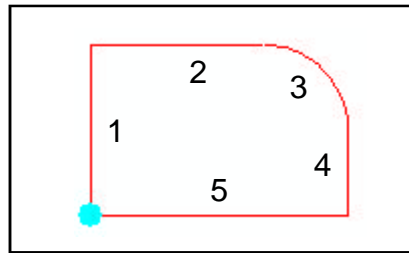


Figure 10(b)  
Graphic Display of Parcel/Traverse

tion of the parcel/traverse as defined in the dialog box.

The graphic representation appears in the color red and is comprised of graphic elements (not features) which will be deleted when the command is terminated.

The graphic representation is intended to give the user a visual representation of the parcel/traverse definition as it

appears in the dialog box. As rows are added or as data is modified in the dialog box, a simple press of the Enter key or click of the Draw button will update the graphic representation.

The Pan X, Pan Y and Zoom data parameters at the bottom of the dialog box provide the user functionality to alter the view as the parcel/traverse is being defined.

The Zoom To button will zoom to the extent of the current parcel/traverse definition, while the Report button enables the user to save or recall a parcel/traverser definition.

Once all of the data has been specified and depending upon if the parcel/traverse is a closed, see Figure 10(b), or a non-closed figure, the operation of the command varies. Presented below are the two possible cases.

Select the Feature(s) to be Created:

Item List: Polygon, Polygon, Lines/Curves, Lines/Curves/Points

Figure 11  
Closed Figure Feature Creation Choice List

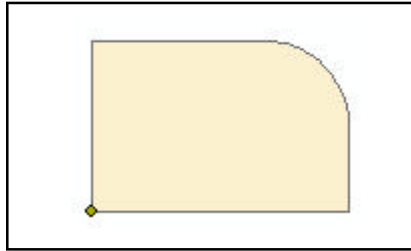


Figure 12  
Polygon Option

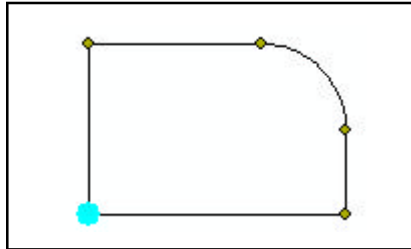


Figure 13  
Points, Lines, Curves Option

**A. Closed Figure Case**

- **9a** Click at the **OK** button to display the dialog box of Figure 11.
- **10a** Scroll down in the *Select the Feature(s) to be Created*: data field, and **select** the option indicating the type of features that the command should create. The user has the ability to create: (a) a single polygon, (b) line and curve features, or (c) line, curve and point features.
- **11a** Click at the **OK** button to create the feature(s),  
or  
**click** at the **Cancel** button to abort the command.

Shown in Figure 12 is the result when the Polygon option has been selected. Figure 13 contains the result when the Lines/Curves/Points option has been selected.

When no topology is to be created, the resultant features are stored in the current active layer. If topology is desired, the features are stored in user-specified topological layers.

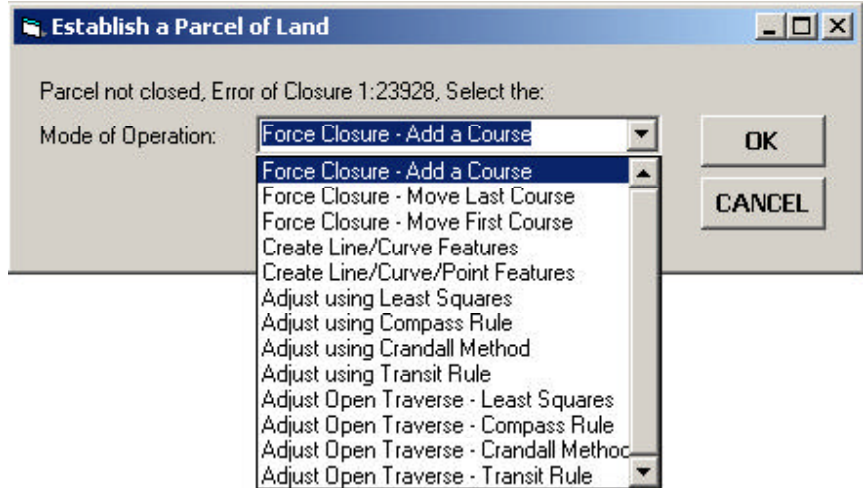


Figure 14  
Non-Closed Figure Mode of Operation Choice List

**B. Non-Closed Figure Case**

- **9b** Click at the **OK** button to display the dialog box of Figure 14 .
- **10b** Scroll down in the item list, and **select** the option indicating the desired mode of operation.
- **11b** Click at the **OK** button to create the feature(s) and/or perform the adjustment,  
or  
**click** at the **Cancel** button to abort the command.
- **12b** If the **OK** button was selected and if one of the Adjust options has been selected, the user will be asked to specify the name of a report file. Once the filename has been specified, the adjustment is performed and the appropriate feature(s) are created.

**Notes**

- a. Shown in Table 1 are the codes and associated information that is required to define a specific type of feature. For example, a line is referred to as **Code A** and requires a direction and length, while a tangent curve that is defined in terms of radius and chord length is referred to as a **Code D** feature.

TABLE 1 SUMMARY OF CODES		
Type	Code	Data
Line	A	Line direction
		Line length
Tangent Curve	C	Radius
		Arc length
	D	Radius
		Chord length
Non-tangent Curve	E	Radius
	B	Chord direction
		Curve radius
F	Chord length	
G	F	Chord direction
		Curve radius
	Arc length	
G	Chord direction	
Curve radius		
Central angle		

- b. Only the information that is required for a specific code needs to be specified. The user should not specify more information than is required. For example, a tangent curve of **Code E** requires only a radius and central angle, the user should not specify any other information, such as chord direction, chord length, etc.
- c. When a **tangent curve** is being defined, the value under the Direction

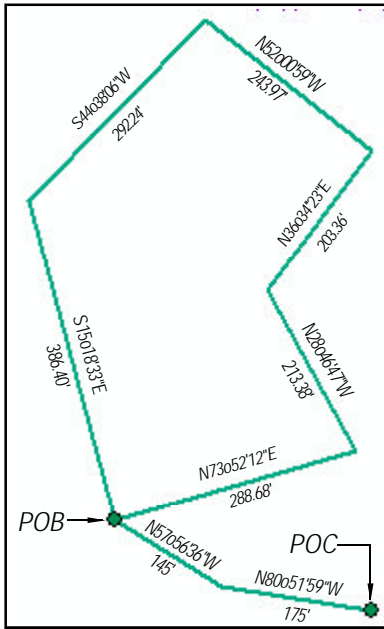


Figure 15  
Sample Closed Traverse  
with Tie-Line

column in Figure 10(b) should be 0.0.

- d. When a **non-tangent curve** is being defined, the value under the Direction column in Figure 10(b) should be 0.0, while the value under the Chord Direction column should be the direction of the chord.
- e. Shown in Figure 15 is a sample closed traverse with a tie-line. The tie-line begins at the POC and terminates at the POB, at which point the traverse



Figure 16  
Parcel/Traverse Termination Query

begins. For this sample, the value that should be entered in the # Tie Line Courses parameter of Figure 9 should be two.

- f. Shown in Figure 16 is the termination query dialog box that is displayed if the Cancel button, see Figure 9, is selected when a parcel/traverse definition is defined. Selecting the Yes button results in the command terminating without creating any features. Selecting the No button returns the user to the Parcel and Traverse Course Entry Form dialog box.
- g. At the bottom of the Parcel and Traverse Course Entry Form dialog box, the command displays the total length of the parcel/traverse along with the error of closure information
- h. To save a parcel/traverse definition to an ASCII text file, the user can select the Report button, after which, select the Browse button, navigate to the desired folder, enter the de-

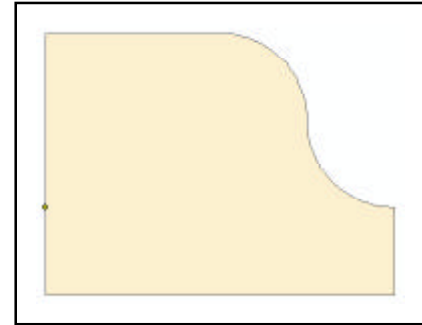


Figure 18  
Polygon corresponding to the  
Sample Parcel with Reverse Curve

sired filename and then select the Save button. This file can be viewed in any word processor or text editor.

- i. To recall a parcel/traverse definition that exists in an ASCII text file, the user can select the Report button in an empty Parcel and Traverse Course Entry Form dialog box, see Figure 9. Select the Browse button, navigate to the desired folder, specify the desired filename and then select the Open button. The tool will then add the appropriate rows to the dialog box. The Draw button can be selected to display the parcel/traverse.
- j. Shown in Figure 17 is a sample parcel with a reverse curve, while Figure 18 contains the polygon feature corresponding to the parcel definition listed in Figure 17.

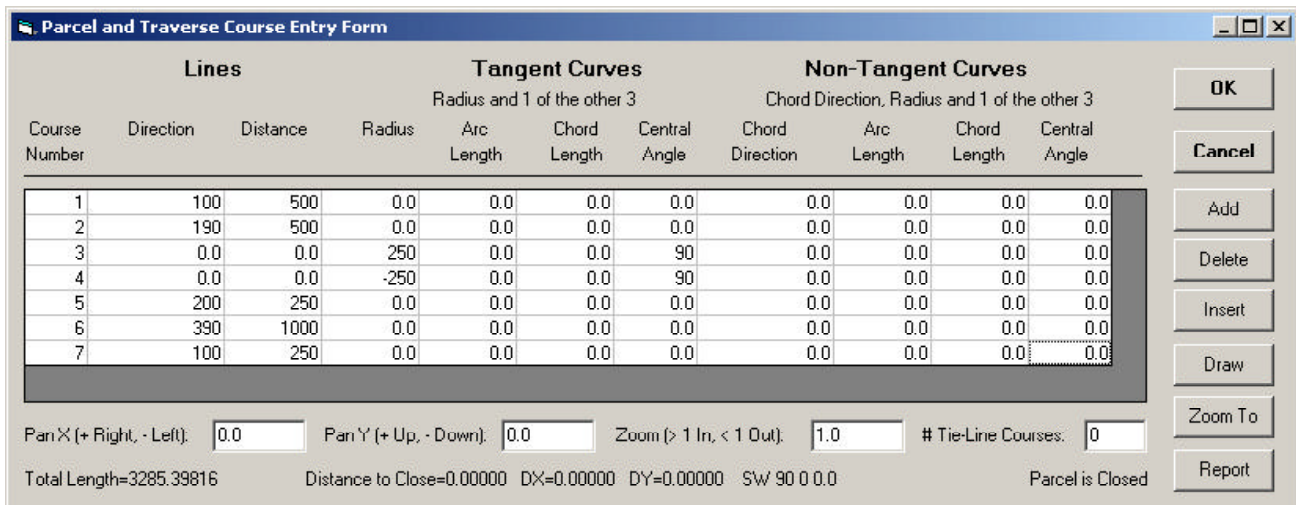


Figure 17 - Sample Parcel with Reverse Curve

Parcel Course Report File

Parcel ID: 1

Course Number	Lines		Tangent Curves Radius and l of the other 3				Non-Tangent Curves Chord Direction, Radius and l of the other 3			
	Direction	Distance	Radius	Arc Length	Chord Length	Central Angle	Chord Direction	Arc Length	Chord Length	Central Angle
1		100	500	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2		190	500	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3		0.0	0.0	250	0.0	0.0	90	0.0	0.0	0.0
4		200	250	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5		390	750	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Distance to Close=0.00000 DX=0.00000 DY=0.00000 SW 90 0 0.0  
 Total Length=2392.69908  
 Parcel is Closed

Figure 19 - Sample Parcel/Traverse Report File

0	Parcel Identification Number (PIN) Format File	- Line 1
PINSECTION 3		- Line 2
PINSUBSECT 3		- Line 3
PINBLOCK 4		- Line 4
PINLOT 3		- Line 5
PINSUBLOT 3		- Line 6
PINSUFFIX 4		- Line 7
SWIS 6		- Line 8
SID 9		- Line 9
PRINT_KEY 25		- Line 10
[ATTRIBUTES]		- Line 11
SUBDIVSN 30		- Line 12
MAPbook 5		- Line 13
MAPpage 5		- Line 14
RW_OWNER 20		- Line 15
RW_STATUS 1		- Line 16
[END]		- Line 17
[PRINT-KEY EQUATION]		- Line 18
0		- Line 19
[AUTO-CLEAN]		- Line 20
1		- Line 21
[END]		- Line 22

Figure 20 - Excerpt of the PIN.TXT file

0	= Single Alphanumeric string with maximum number of characters specified on Line 10
1	= New York State ORPS format
2	= Type 2 format which is Lines 2 and 3 concatenated to form the PRINT-KEY (Line 10)
3	= Type 3 format which is Lines 2, 3 and 4 concatenated to form the PRINT-KEY (Line 10)
4	= Type 4 format which is Lines 2, 3, 4 and 5 concatenated to form the PRINT-KEY (Line 10)
5	= Type 5 format which is Lines 2, 3, 4, 5 and 6 concatenated to form the PRINT-KEY (Line 10)
6	= Type 6 format which is Lines 2 - 7 concatenated to form the PRINT-KEY (Line 10)
7	= Type 7 format which is Lines 2 - 8 concatenated to form the PRINT-KEY (Line 10)
8	= Type 8 format which is Lines 2 - 9 concatenated to form the PRINT-KEY (Line 10)

Figure 21 - PIN Format Numeric Codes

- k. Shown in Figure 19 is the parcel/traverse report file corresponding to the polygon shown in Figure 12. This file is read and written by the Report button and can be created by the user using any word processor or text editor.
- l. The values under the Direction column utilize the numeric equivalent for Bearing directions. That is to say, 100 actually denotes NE 0° 0' 0", while 190 denotes NE 90° 0' 0". Likewise, 200 denotes SE 0° 0' 0" and 390 denotes SW 90° 0' 0".
- m. Shown in Figure 20 is an excerpt of the PIN.TXT file which controls the current active PIN Format as well as other parcel parameters. Line 1 contains a numeric value denoting the desired PIN Format, see Figure 21. The PIN.TXT file in the CEDRA distribution folder, \cedra\avprjs contains a full description of the file's contents.
- n. The reader is referred to the June 2005 issue of Command of the Month for more information describing the operation of the |Define Parcel| tool.
- o. The file PRCLLAYR.TXT within the \cedra\avprjs folder enables the user control the disk file names of the topological layers. The information in this file is only used when topology is to be established.

## Summary

The Parcel and Traverse Course Entry Form dialog box is a very flexible form for entering parcel/traverse data. We encourage those who have not used this form to try it and see for themselves.

As always, users who have a need for functionality that is not presently available in CEDRA software should feel free to forward these requests to CEDRA, as well as, any other comments or suggestion you may have.

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