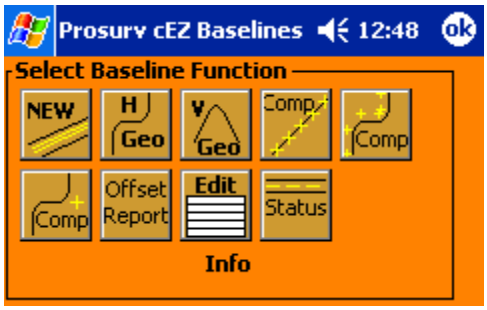
cEZ Baselines



The **Baseline** routine is the most powerful routine in Prosurv cEZ**.** Its capabilities are immense. With the baseline routine you can:

- **Create Horizontal Control (i.e. Centerline) including horizontal curves,tangents, compound curves, and reverse curves.**
- **Create Vertical Control (i.e. PVI to PVI) using stations and elevations including Vertical Curves.**
- **Offset an entire Baseline at any interval (i.e. every 50'). Prosurv cEZ automatically calculates the grade for each station based on the profile entered in step 2. This routine allows for a vertical change between the baseline and the offset line.**
- **Calculate an individual stations' coordinates or coordinates and elevation.**
- **Compute an Offset Report based on the Horizontal Geometry.**
- **Compute the PC's, PT's, and intersecting angle points (of multiple tangents) at a given offset automatically.**

Prosurv cEZ can store up to 10 different baselines per job. When a Baseline is created, a set # is assigned to the Horizontal Control and a separate set # is assigned to the vertical control. You can create points using some of Prosurv's other routines, and then store them in the sets yourself, however, it is much easier to use the **Geometry Creation** routines in Baselines.

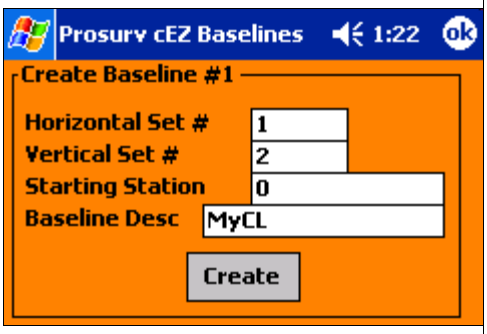
The starting station and a description of the baseline is also stored when the baseline is created. All of the above entered items may be edited at any time using the **Edit Baseline** button.

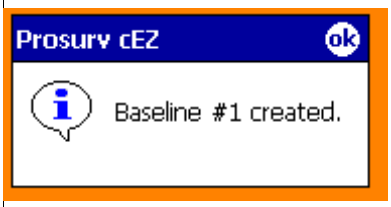
Starting your Baseline

Tap the **New Baseline** button to begin.

Before entering any geometry, you need to tell Prosurv cEZ which **SETS** will be used for this Baseline. For example, **SET #1** might contain the point numbers of the **Horizontal Geometry,** while **SET #2** contains the point numbers of the **Vertical Geometry.** You can also give a starting station and a description to the Baseline. Tap the **Create** button when finished.

When creating the Baseline, the SETS don't need to already exist. Just choose a couple of SETS that are currently not being used.

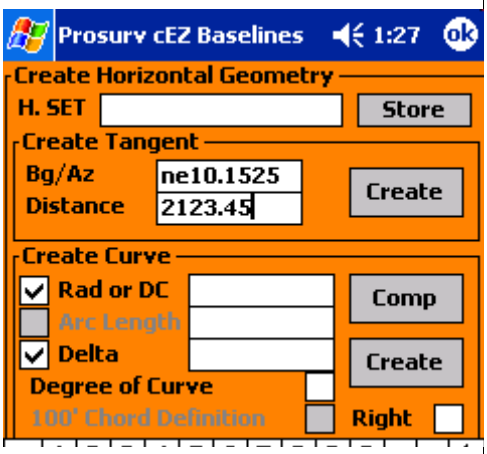




Baseline #1 has been created and stored. You can create up to 10 Baselines per job.

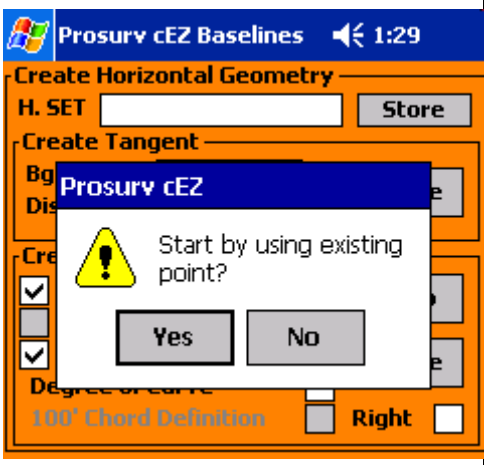
Create Horizontal Geometry

Next, you'll want to create the Horizontal Geometry. Go ahead and enter the first tangent bearing and distance. Then tap the **Create** button under the Create Tangent heading. Since the **SET (SET #1) is empty, and in fact, there are no points currently in the job, you'll see the following window shown here.**

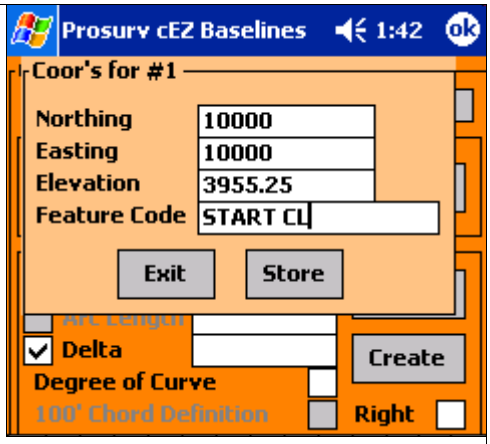


Enter the first tangent's Bearing and Distance, and tap **Create**.

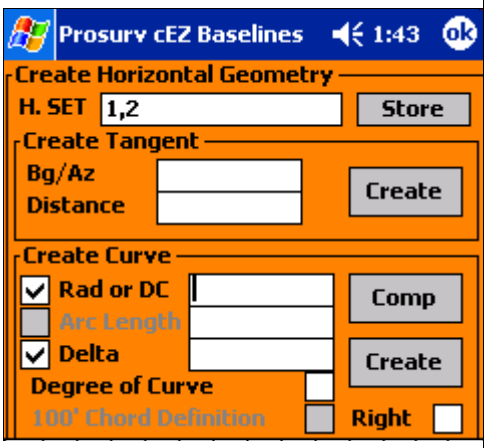
If there were existing points in the job, and you wanted to use one of those points to start your Baseline, you'd answer **Yes**. **However, there are currently no points in the job, and you need to start using a new point. Therefore, select No.**



Enter the coordinates of the starting point and tap **Store**.

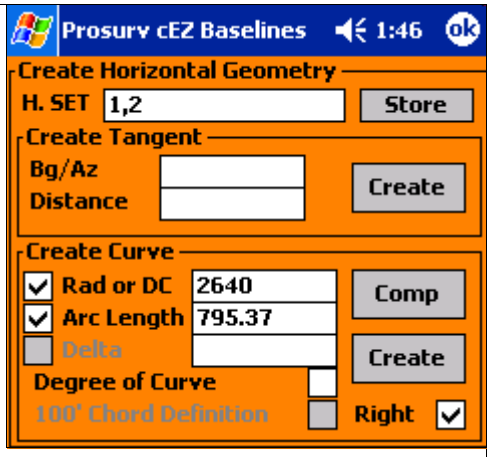


Once you press the **Store** button, the first point is saved and a second point is computed based on the Bearing and Distance that you entered.



The point numbers are then displayed in the "H. SET" text box. This box represents the current points in your Horizontal Set (SET #1). So far, there are two points, 1 & 2. However, they are not 'stored' in the SET until you tap the Store button on the right (which we'll do later, since we're still entering geometry).

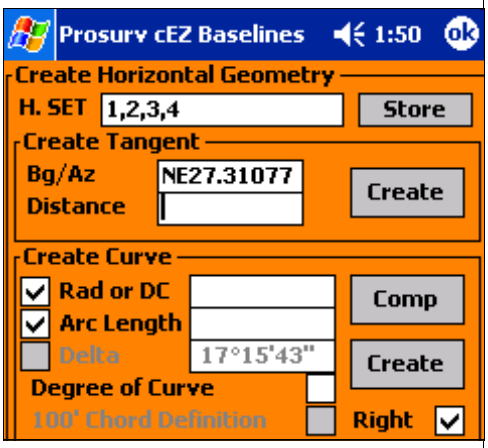
Next, you can enter curve data. You have the choice of entering different curve data, depending on the data that's been given to you.



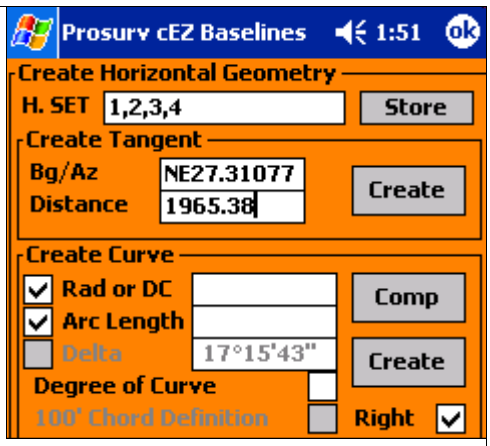
For this curve, we'll select a **Curve to the Right**, and enter a **Radius** of 2640' and an **Arc Length** of 795.37'.

Tap **Create** to create the new points. Prosurv cEZ automatically computes the **Radius Point and PT** of the curve, and places the point numbers in the **H. SET** text box.

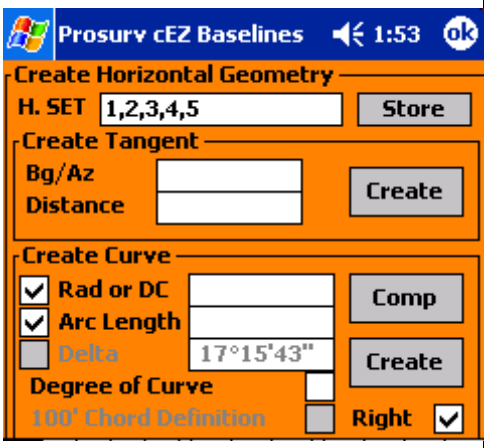
The Bearing **out of the curve** is computed automatically and displayed. All you need to do now is enter the final tangent's distance and tap **Create**.



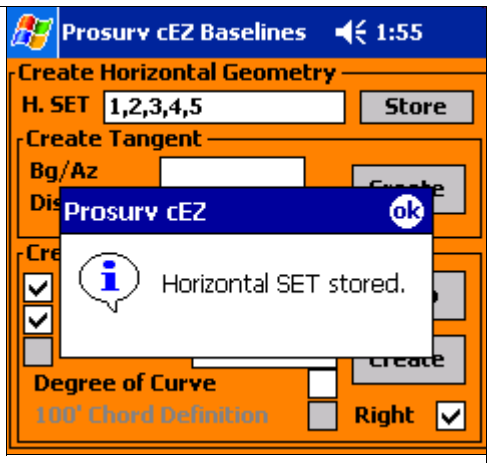
Enter the final tangent distance and tap **Create**.



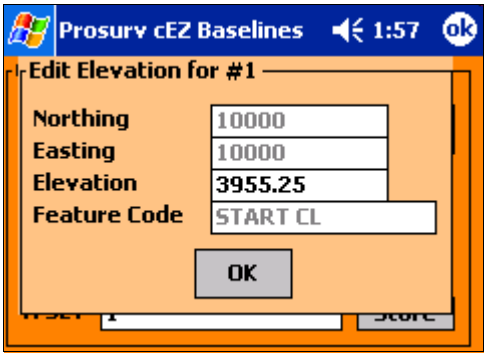
Point #5 is computed and stored. You've completed creating your Baseline. Now, just tap **Store** to store points 1 through 5 in the SET (SET #1).



Prosurv cEZ lets you know that the Horizontal SET has been stored successfully. Now you're ready to enter some vertical geometry.



Create Vertical Geometry

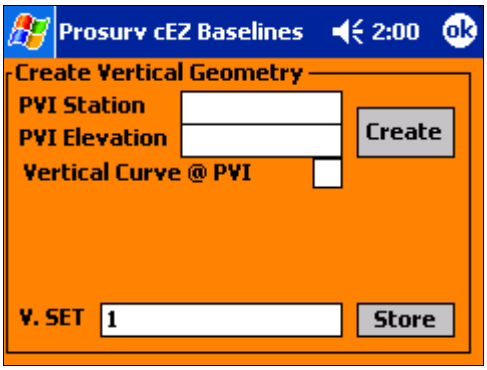


When you tap the **Vertical Geometry** button, Prosurv cEZ checks to see if any Vertical Geometry already exists.

It also checks to see if there's valid Horizontal Geometry.

If so, and because there's no Vertical Geometry yet, the first Baseline point will be displayed for you. This is so you can edit the elevation of the starting point (if necessary).

Tap **OK** to continue.

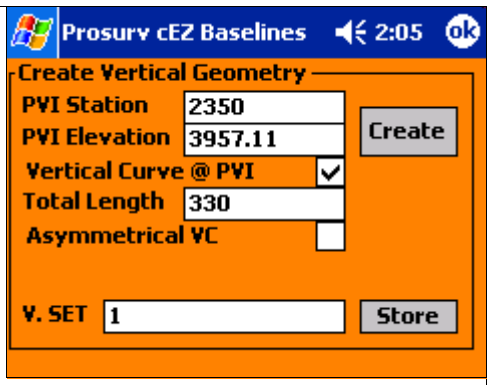


You can now enter each PVI's Station and Elevation.

Note that your Vertical SET's text box already contains point #1. The starting point for the Vertical Geometry should be the same as the starting point for the Horizontal Geometry.

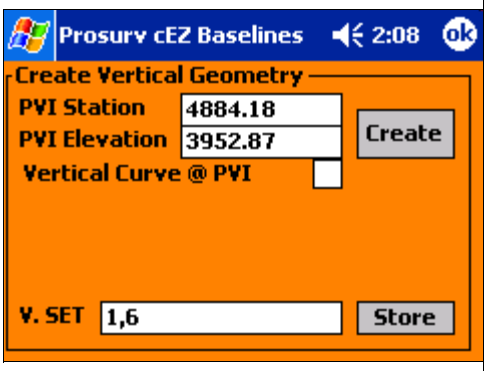
Vertical Curves and even Asymmetrical Vertical Curves are supported in Prosurv cEZ.

Enter each PVI's station and elevation, selecting a vertical curve when needed. Then tap the **Create** button.

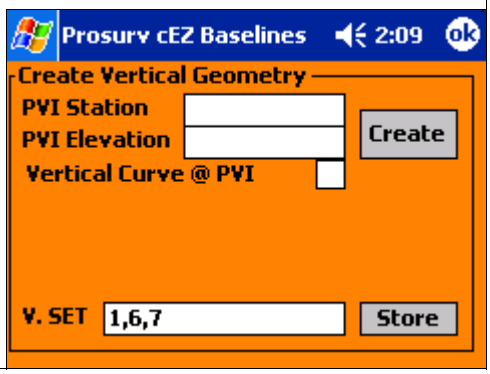


Prosurv cEZ will compute a point at the given station along the CL. The point's elevation will be the PVI's elevation. Special descriptors are stored with each computed point, so you shouldn't alter or edit these points.

The total length of your Baseline is 4884.20', so the ending station is 48+84.20'. When entering PVI's, be sure that your last PVI is a little short of the ending station, so that a rounding error conflict does not arise. For this example, entering a PVI Station of 4884.18 should suffice.

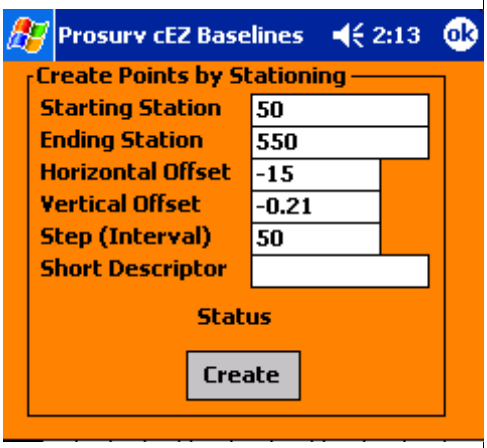


The PVI's that we need have been entered. Now just tap the **Store** button to store the points in the SET.



The Vertical SET has now been stored. We're now ready to use a Baseline.

Compute Multiple Offsets at Given Intervals



Prosurv cEZ makes it easy to compute dozens of points offset both Horizontally and Vertically from your Geometry.

Enter the Starting and Ending stations, the Horizontal and Vertical Offsets, and the Step Interval. Then just tap **Create**.

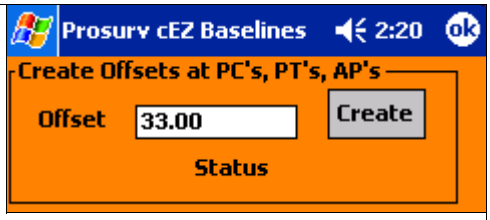
In seconds, you'll have dozens of new "hard points" that you can Radially Stakeout.

The Vertical Offset is added to the CL elevation at the computed station. In this case, the elevations will be 0.21' lower than the CL elevations. This is great for pre-computing curb stakes, since you can indicate the vertical drop from CL to the Top of Curb.

Compute Offset Points at Major Geometry Points

This routine will compute offsets of all the major Horizontal Geometry points such as PC's, PT's and even intersecting Angle Points ("true" geometry does not contain multiple tangents, however, multiple tangents are supported by Prosurv cEZ as long as no curves exist in the geometry).

Just enter the amount of the offset and tap **Create**.

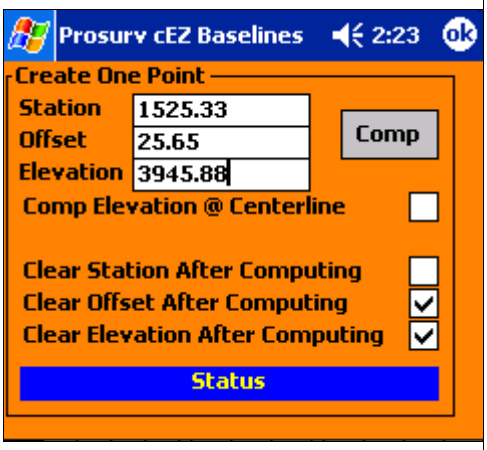


Compute One Offset Point

Use this routine to create single points offset from the Baseline.

The elevation can either be computed by Prosurv cEZ at CL, or you can hand-enter the elevation, which makes this routine great for computing points such as Manholes and other structures that appear on your plans.

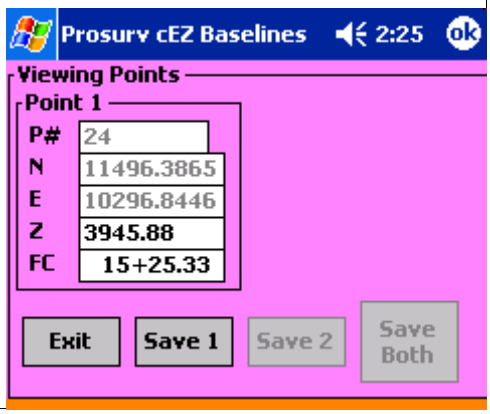
If you compute the CL elevation, you can enter a Vertical Offset.



The point is computed and displayed. If **Instant Save** (located in **Points**) is ON, then the point will be stored instantly.

Note the automatic Feature Code which contains the Station and Offset that you entered.

Tap **Save 1** to store the point.

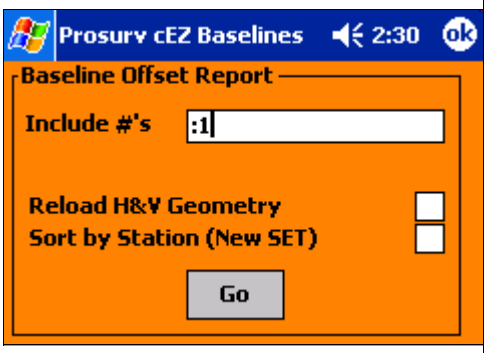


Offset Report

View a Baseline Offset Report

You can view an offset report of up to 150 points at one time.

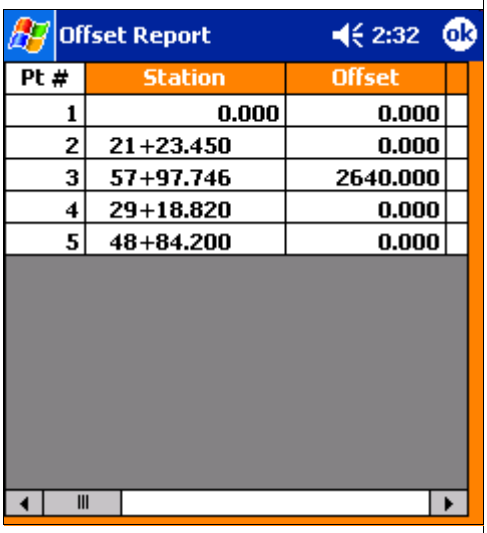
You can enter a point list, such as 200.215, or you can enter a SET#. In this example, we'll view a report of the horizontal geometry itself, by entering **:1**, which represents SET #1.



SETS can be indicated by a colon, semi-colon, or asterisk.

This routine is a great way of checking your computations and data entry, before you stake out the points!

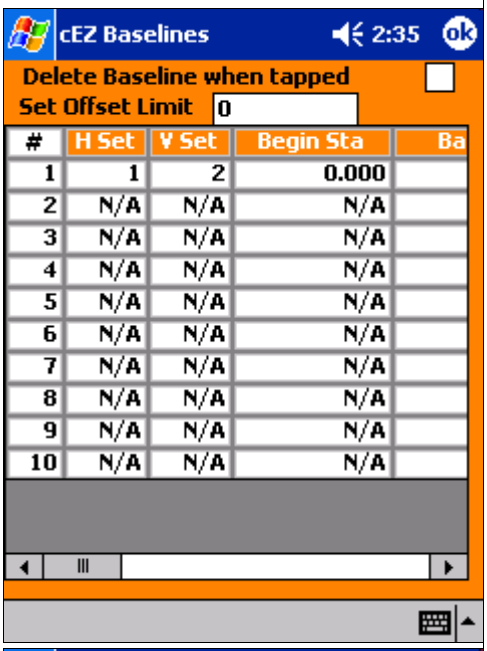
You can scroll right to view the Elevations and Feature Codes of each point.



Edit Baselines

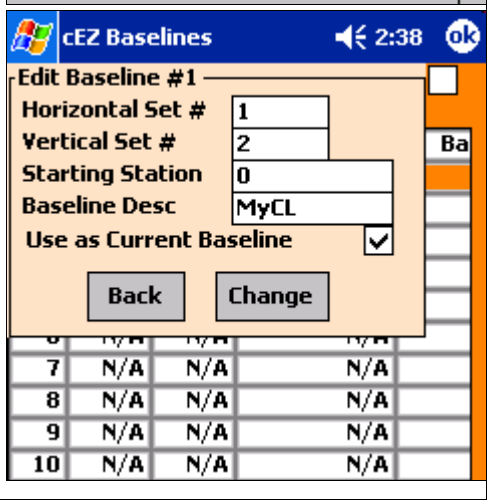
Tap the **Edit Baselines** button to view/edit/delete your Baselines.

Scroll right to see the starting station and description of each baseline.

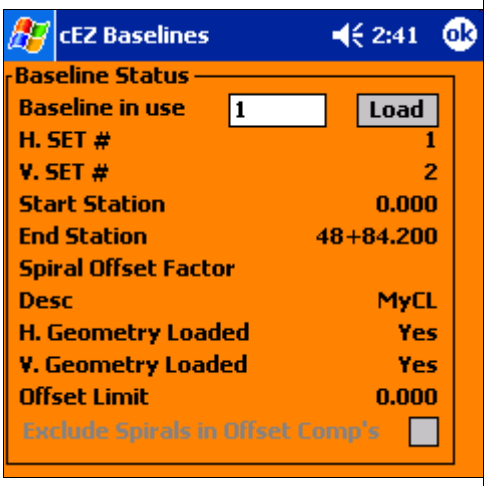


By tapping a Baseline, you can edit that Baseline's information such as Horizontal and Vertical SETS, Starting Station, and Description.

Also, you can then checkmark that you want to use that Baseline as the "Current" Baseline.



View the Status of the Current Baseline



Tap the **Status** button to obtain the current status of a Baseline.

Information includes the Horizontal & Vertical SET #'s, starting and ending stations, and whether the H & V geometry has been loaded internally by Prosurv cEZ.

You can also switch to and Load another Baseline by typing in the Baseline # and tapping the **Load** button.

Final Notes About Baselines

- Going into a curve from a tangent, the radius point is assumed to be at 90 or 270 degrees from the Backtangent. This radius point is stored automatically with the descriptor 'rp'. The PT is computed based on the arc length and radius given. Remember that all arcs (deltas) are assumed to be <180 degrees in Prosurv cEZ.
- Coming out of a curve into a tangent, the Tangent's bearing is automatically calculated for you and displayed in the Tangent Information's window. Simply enter the distance to the next point.
- Going into a compound or reverse curve is computed automatically--simply enter the next curve's information.
- **Prosurv cEZ Baselines must start with a Tangent for proper functioning.**