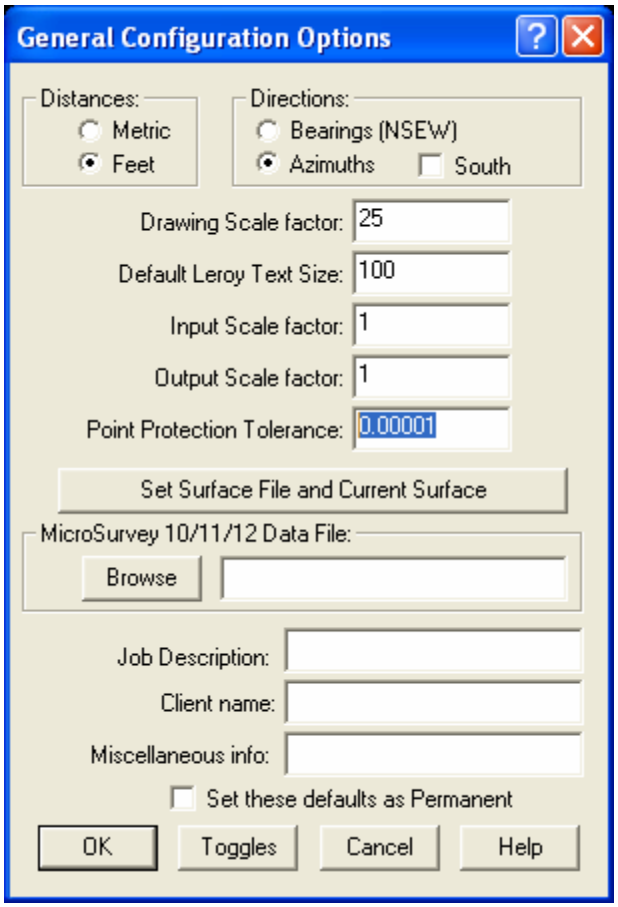
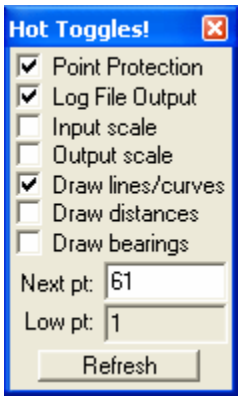
Point Protection Tolerance

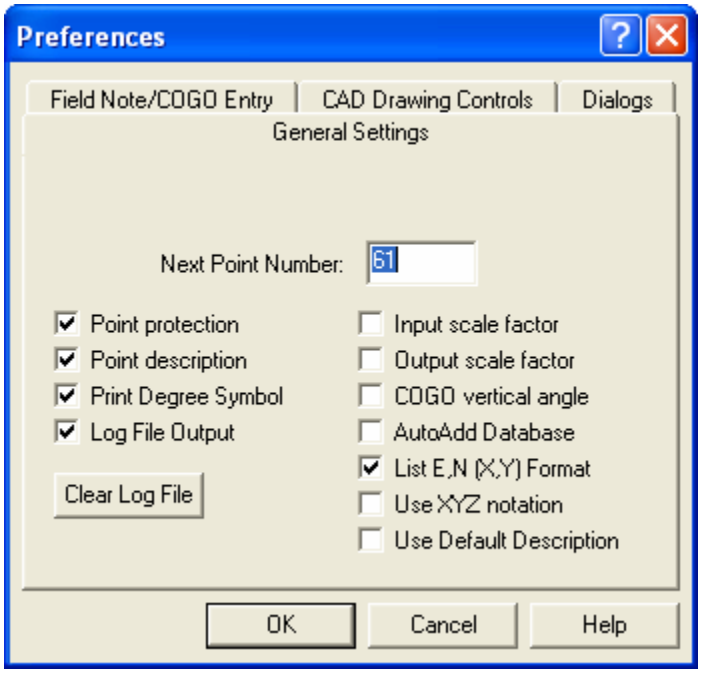
To set this variable, go to the MsTools menu -> MicroSurvey Job Defaults.



This value is only used when the Point Protection Toggle is turned on. It can be turned on via the Hot Toggles (if the dialog is not on screen it can be brought up by going to the MsTools menu -> Hot Toggles!)

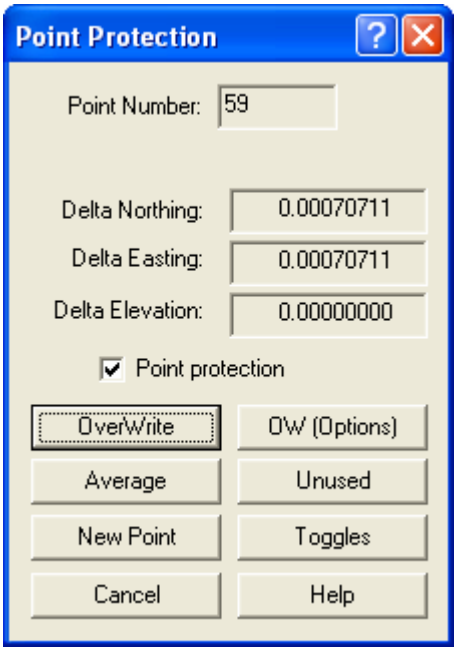


It can also be turned on by going to the MsTools menu -> MicroSurvey System Toggles:



The Point Protection Tolerance variable is used for two different functions.

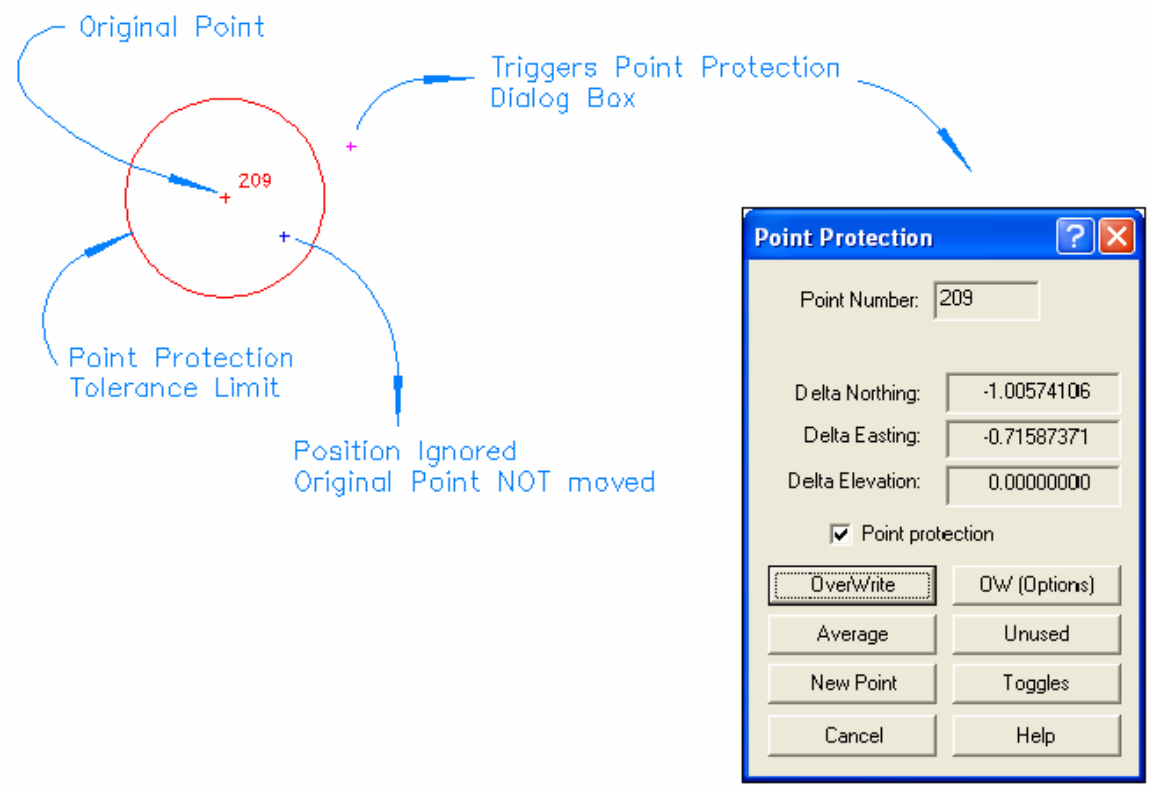
1) This is the distance below which two points are considered to be equal. If the distance is greater between the two points with the same point number we then trigger the point protection features and this dialog comes up.



If this dialog does come up, you will have all of its options available to you. (details not discussed in this technical note)

Two points with the same point number cannot exist in one drawing at the same time.

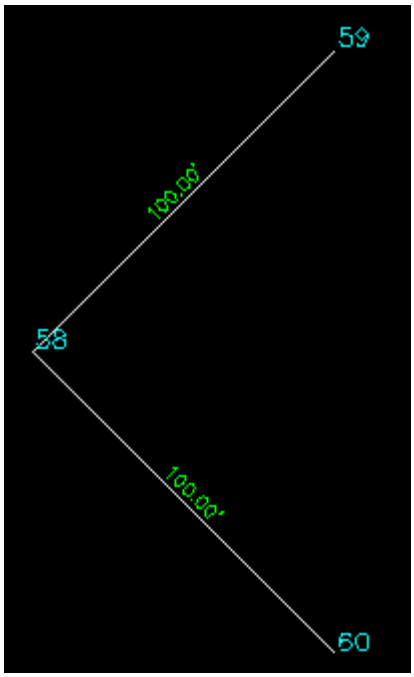
- When the Point Protection Toggle is "**on**" and MSCAD detects a second point being read in or calculated then it will:
  a) if the difference between points is *greater* than tolerance: display the Point Protection dialog box.
  b) if the difference between points is *less* than tolerance: do NOT replace the old point with the new one. Original point remains unchanged!



- When the Point Protection Toggle is "**off**" and MSCAD detects a second point being read in or calculated, with the same point number, then it will simply replace the old point with the new one without any warnings.

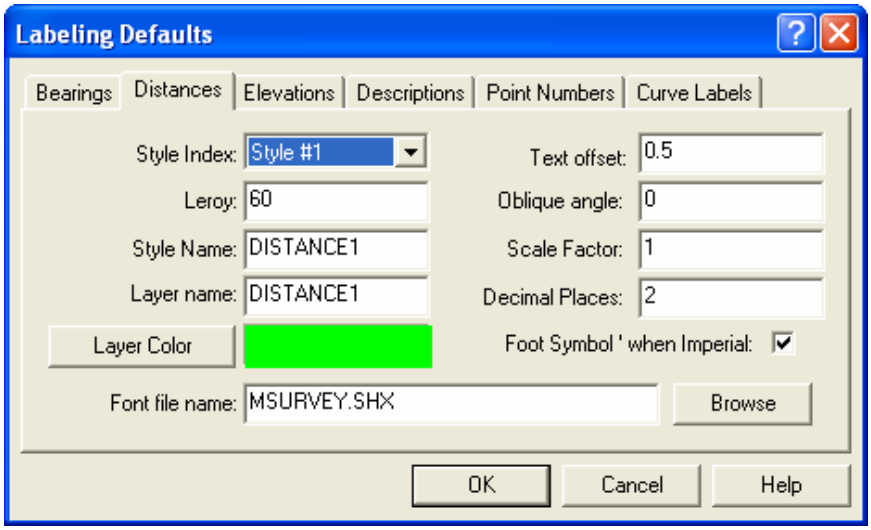
2) In COGO, when inversing 3 points to generate a curve, if the Point Protection tolerance is set too fine then the 3 point inverse will not calculate or draw a curve.

Example:
The first distance from the radial point to the BC = 100 (point 58 to 59) and the second distance from the radial point to the EC = 99.999 (point 58 to 60)



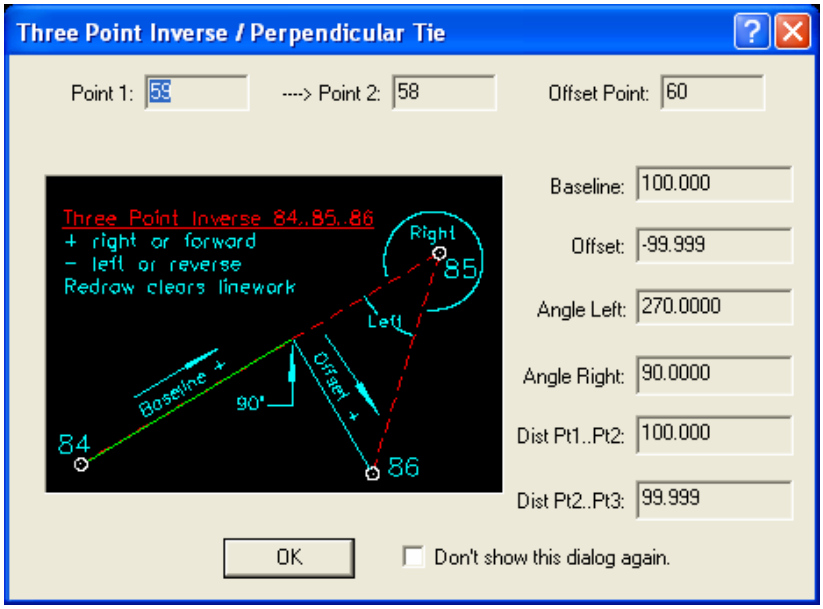
When you label the distance for the two lines, it labels as 100.00 for each line because the labeling defaults have been set to 2 decimals and it rounds the 99.999 to 100.00.

The labeling defaults are set under the MsAnnotate menu -> Labeling Defaults -> Distances. Because it is set to 2 decimals, in this example, the 99.999 is rounded to 100.00 for labeling but the actual distance remains unchanged and is still 99.999.

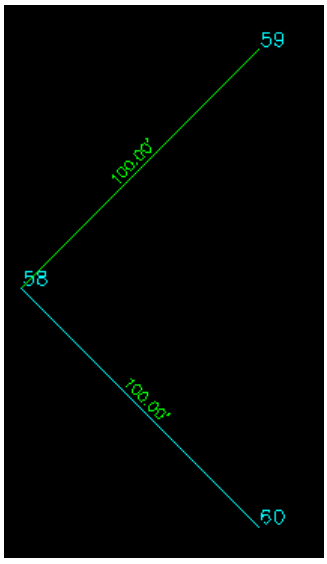


If the Point Protection tolerance is set to 0.00001 (which is the default) and, if you do a 3 point inverse in COGO, you will not get a curve being calculated. Instead we give you the baseline and offset calculations, as shown below:

: COGO
Inverse:Pt..Pt/Curve Inverse:Pt..Pt..Pt
Enter From Point: <104>(Backup/Toggles/Curve/CB): **59..58..60 <-what you type in**
Three point inverse between 59 , 58 , 60
Baseline : 100.000 Offset : -99.999
Angle Right: 90.0000 Angle Left : 270.0000
Distance from 59..58 = 100.000
Distance from 58..60 = 99.999



In the drawing, the lines may appear to change color, green to denote the baseline and cyan to denote the offset. Because this example is drawn at 90 degrees, they are shown on top of the original lines. Do a redraw or zoom and they will be removed and you will be back to the normal linework.

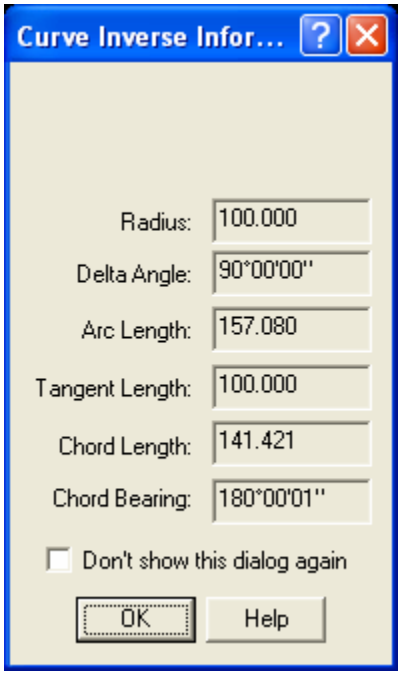


Because the drawing shows the radii being equal, the curve should be based upon what is labeled in the drawing, to keep everything clean.

If you need to calculate and draw a curve between these points, without resetting one of them to make the radii perfectly equal, then you need to change the Point Protection Tolerance.

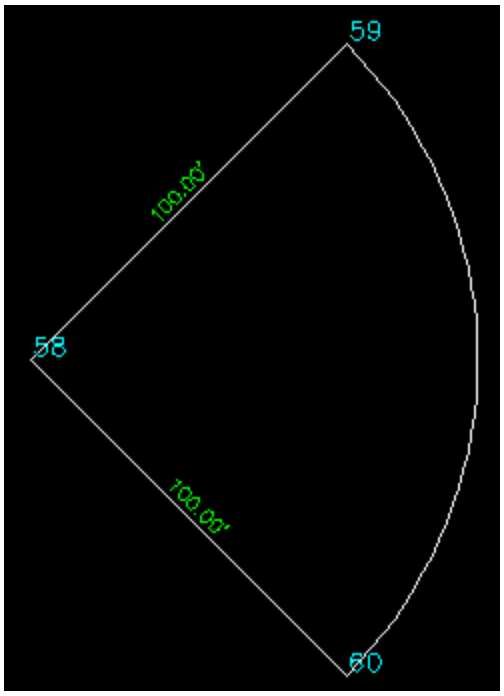
If we set the Point Protection Tolerance to 0.001, then do the 3 point inverse in COGO, because the difference is now equal to or less than the tolerance, the curve is calculated and drawn.

: COGO
Inverse:Pt..Pt/Curve Inverse:Pt..Pt..Pt
Enter From Point: <104>(Backup/Toggles/Curve/CB): **59..58..60 <-what you type in**
Arc: 157.080 Chord: 141.421 Tangent: 100.000 Delta: 90.0000 Radius: 100.000



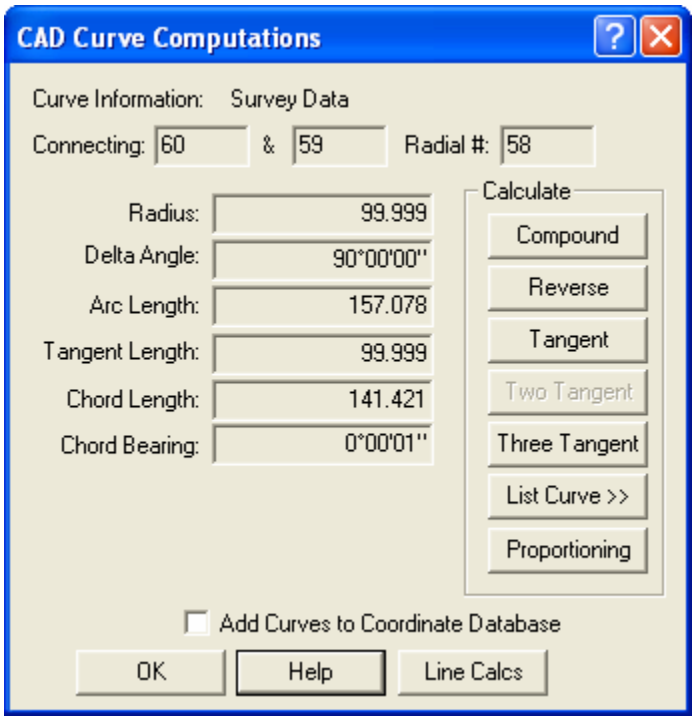
The calculation is completed based upon the first radius being held and used for both ends. So in this example, 59..58 = 100.00 and this value is used to calculate the curve information.

The curve is only drawn if the toggle is on to draw the linework. This is set in the Hot Toggles or the MicroSurvey System Toggles (both dialogs are mentioned above in this technical note).



Because we are working in a CAD environment, we can not draw a curve if the two radii are not equal. To make it easier, we actually draw the curve using the smaller length as the radii. So in this example, the curve is actually drawn using the 99.999 radius.

To see this, with no command running (and your grips turned off), pick on the curve. The CAD Curve computations dialog will come up showing the curve information for the arc draw on screen.



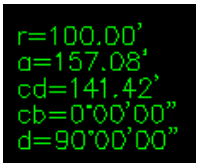
If you zoom in very tight to point 59, you will see that the curve is hitting the line short of the point.

If you zoom in very tight to point 60, you will see that the curve meets the line perfectly.

The drawn curve will use the shorter of the two radii causing an undershoot on the longer line.

If you label the curve in the drawing using:

a) MsAnnotate menu -> Add Curve Labels -> Label Off Curve,



b) MsAnnotate menu -> Add Curve Labels -> Label On Curve,

c) MsAnnotate menu -> Add Table -> Add Curves to Table.

NUM	DELTA	ARC	RADIUS	BEARING	DISTANCE
C1	90°00'00"	157.08'	100.00'	0°00'01"	141.42'

In all 3 cases, the labeling defaults for the distance will be used. So just like the line labels being rounded to 2 decimals (shown above), the radius here is also rounded to 2 decimal places.

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