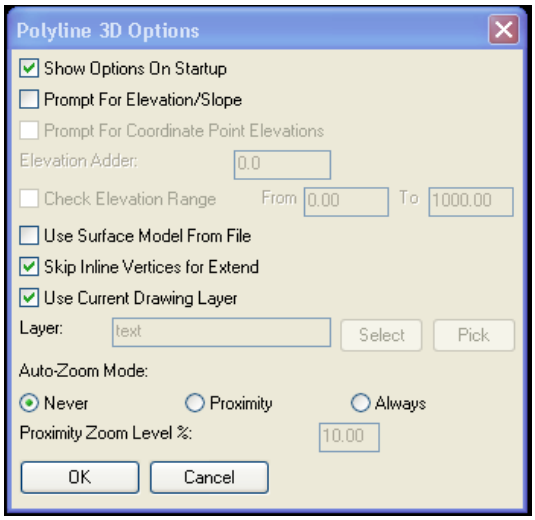
Creating Boundary Lines and Break Lines

Once the points are drawn we can create inclusion/exclusion areas and break lines. During these instructions any Carlson module can be used (civil or survey). Remember to save your drawing!

Manually Creating Inclusion Areas

The inclusion area is the area that was surveyed and will be contoured. If there are any large buildings or objects that shouldn't be contoured an exclusion line will be drawn around them in the steps after creating the inclusion area.

1) Drawing a 3D Polyline: First set the OSNAP settings to Node only, this is located at the bottom of the screen.
   a) Change the layer to boundary and freeze all layers but this and pnts.
   b) **Draw Menu → 3D Polyline, "**Polyline 3D Options" box will appear.
   c) Check boxes as shown in the figure below.
   d) Click **OK**



2) Start snapping to the points around the outside perimeter of drawing. Do not click on the blank screen when doing this, only points with an elevation, the blank screen will give you an elevation of 0.
   a) Close the polyline by typing "**C**" → **enter** into the command line.

Automatically Creating Inclusion Areas Using Shrink Wrap Entities

3) Shrink Wrap Entities: **Draw Menu → Shrink Wrap Entities** (note: turn off any points that shouldn't be contoured)
   a) Press "**Enter**" for gap methodology
   b) Type in a layer name to use **Boundary_Include**

c) **Select Points** or type "**all**" → **Enter**
d) Choose a perimeter reduction level: press "**enter**" for default of **2**. Or if the perimeter should be tighter choose a number less than 2, and if it should be looser then choose a number greater than 2.

Creating Exclusion Areas

Exclusion areas should be drawn around features that shouldn't get contoured. These areas could include buildings, ponds, man made features, ect.

4) Draw 3D polyline: **Draw Menu** → **3D Polyline**, repeat steps number 1 and 2.

Creating Break Lines

Break lines should be used to define an area that has major elevation change such as banks and walls. A 3D polyline will be used to connect points along these features.

5) Draw 3D polyline connecting features: **Draw Menu** → **3D Polyline**, repeat step number 1.
   a) Snap to points that would define a feature such as toe of bank.
   b) The 3D polyline can be closed or open

6) If the contours are too round where the break line was created: Use Tag Hard Breakline Polylines
   a) **3D Data** → **Hard Breaklines** → **Tag Hard Breaklines**
   b) Select polyline that was created in the step 5.