New Jersey SurvCon 2018

Tips & Tricks for Point Setting and Stakeout

With Carlson Survey

Presented by

That CAD Girl

Who Is That CAD Girl?

Jennifer DiBona is a long-time CAD consultant and trainer doing business as **That CAD Girl**. She is based in Raleigh, North Carolina.

Jennifer has a degree in Surveying and spent about 15 years working as an engineering & surveying technician before leaving to become a Civil 3d Implementation Certified Expert (ICE) for an Autodesk reseller.

Today, as That CAD Girl, Jennifer provides sales, support and training for Carlson, AutoCAD and IntelliCAD software and Carlson hardware and data collection. Jennifer specializes in Field to Finish, Surface Modeling, CAD standardization and Carlson Software implementation.

Jennifer is one of the charter members of Carlson College, has been a member of the Steering Committee for the National CAD Standard® and most recently served as Chair of the Survey/Civil Task Team.

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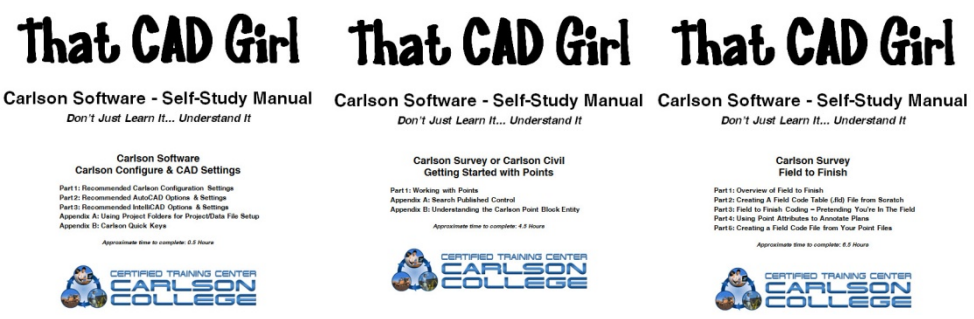
Jeremy Taylor is a licensed Professional Land Surveyor based in Apex, North Carolina and is the owner of Taylor Land Consultants PLLC. Jeremy has been licensed in North Carolina since 1996 and holds associates degrees in both Survey Technology and Civil Technology.

In his spare time Jeremy steps into the role of **That CAD Guy** to provide sales, support and training on hardware and data collection for That CAD Girl.

You can reach Jeremy at jeremy@taylorlc.com or (919) 337-7998.

Carlson Self-Study Manuals are available for purchase from my online store at www.thatcadgirl.com



1 Draw-Locate Points

Points in a CRD file can be drawn into a CAD file using one of two methods: Draw-Locate Points or Draw Field to Finish.

You can find Draw-Locate Points under the Points menu in any Carlson desktop software package.

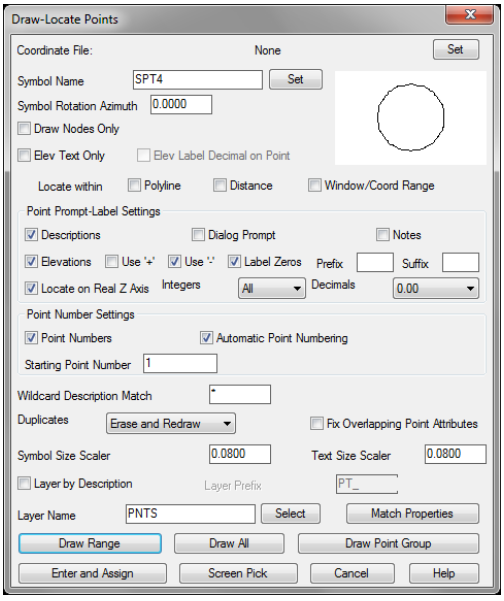
Compared to Field to Finish, Draw-Locate Points is a simpler, more generic method of drawing points that, generally, applies the same properties such as the point symbol, insertion layer, display of point attributes, etc. to all points drawn at the same time. In Draw-Locate Points you can:

- ✓ Create new points in the CRD and draw them into the drawing by entering Northing, Easting, Elevation and Description using the **Enter and Assign** button,
- ✓ Create new points in the CRD and draw them into the drawing by screen-picking the location and entering the Elevation and Description using the **Screen Pick** button,
- ✓ Draw a range of points that are already defined in the CRD file,
- ✓ Draw the points included in a point group (and already defined in the CRD file),
- ✓ Draw all the points in the CRD file.

Changes to settings in the following commands/dialog boxes will affect the settings in Draw-Locate Points:

- Settings > Carlson Configure > Drawing Setup
- Settings > Drawing Setup
- Points > Point Defaults

To avoid having multiple copies of the same point in a drawing, make sure to set the **Duplicates option to Erase & Redraw** option before clicking one of the draw buttons.

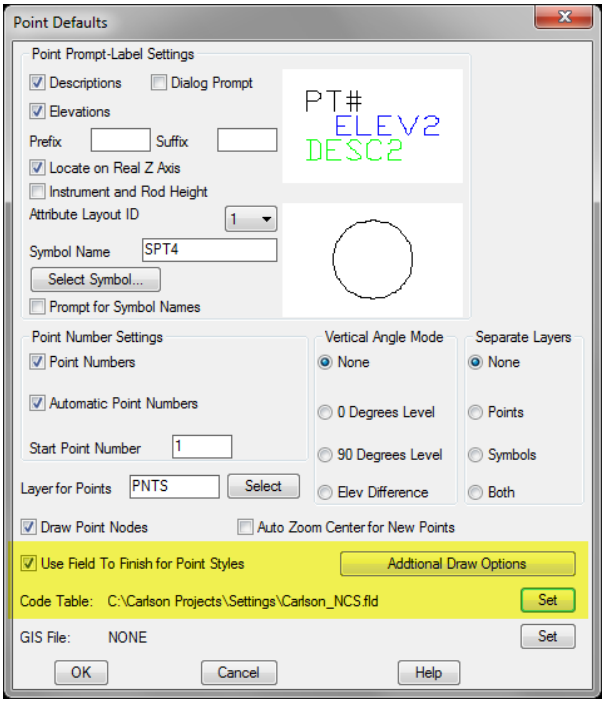


2 Applying Field to Finish Styles to Draw-Locate

In Points > Point Defaults, you can set a default Field Code Table (.fld) file for the drawing and override some settings in Draw-Locate Points with those in the .fld file.

By selecting the **Use Field to Finish for Point Styles** option, properties of points such as drawing description, symbols, layers, etc. can be set based on the point description and field code definition in the .fld file.

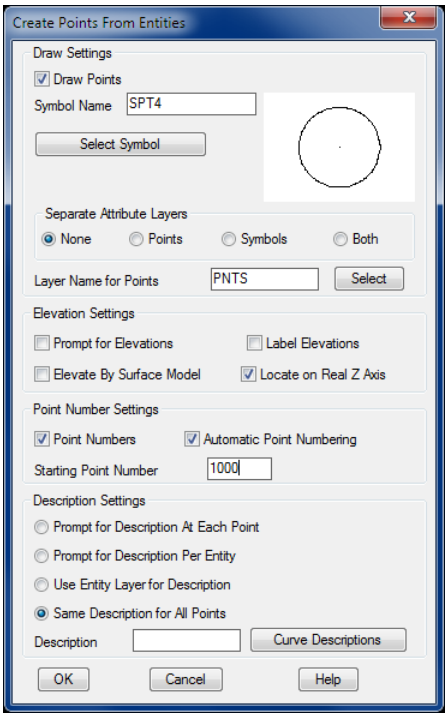
You can find Point Defaults under the Points menu in any Carlson desktop software package.

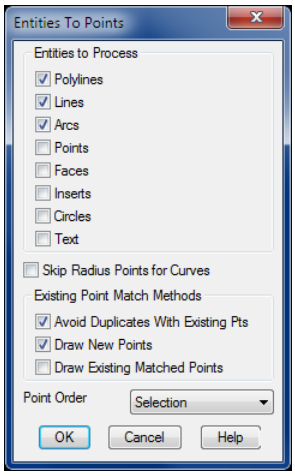


3 Create Points From Entities

This command provides a quick way to set Carlson points on endpoints, insertion points and vertices of lines, arcs, polylines, text and other CAD entities. It also gives you a lot of flexibility when assigning point numbers, elevations and descriptions for points set on these entities.

This command is available in Survey under the Cogo menu.





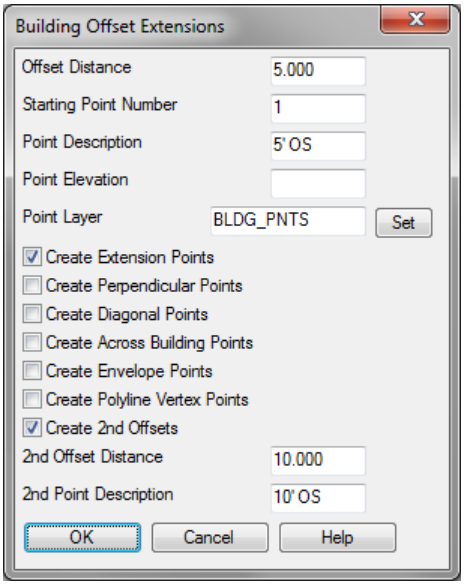
4 Building Offset Extension

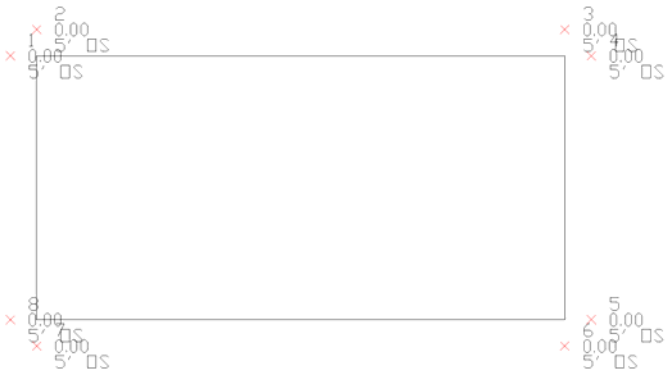
The Building Offset Extension command allows you to set Carlson points at specified offset distances from corners of a building (vertices of a polyline).

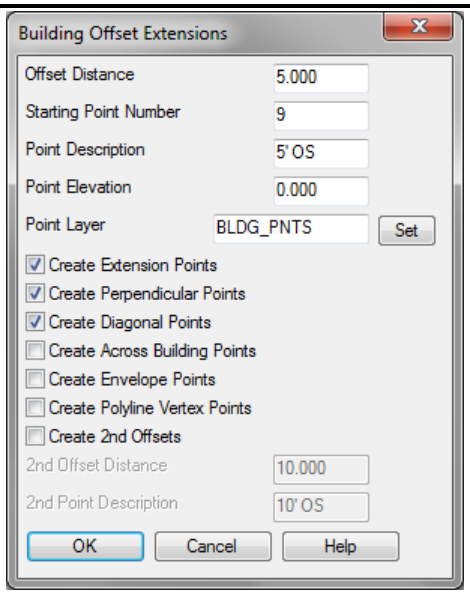
Some of the options available include:

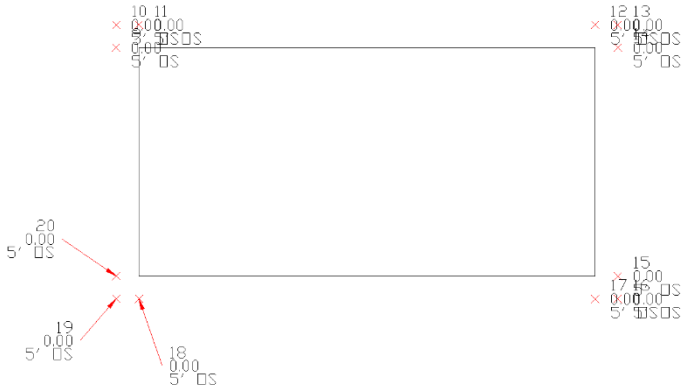
- Setting up to two offset points per side, per corner
- Setting elevations for offset points based on the polyline elevation
- Creating points diagonally or perpendicular to each vertex
- Creating points on the polyline or on offsets or both

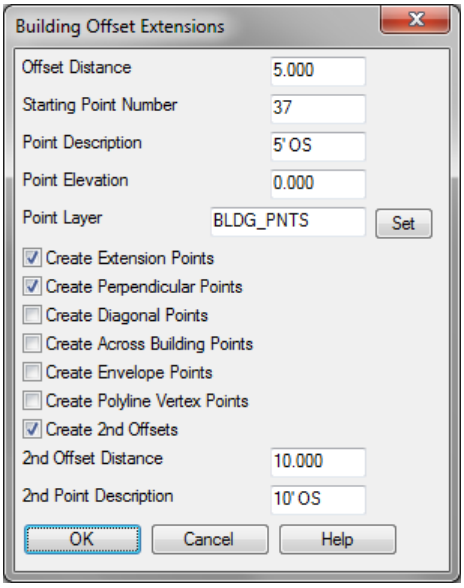
Some options and resulting points are shown below:

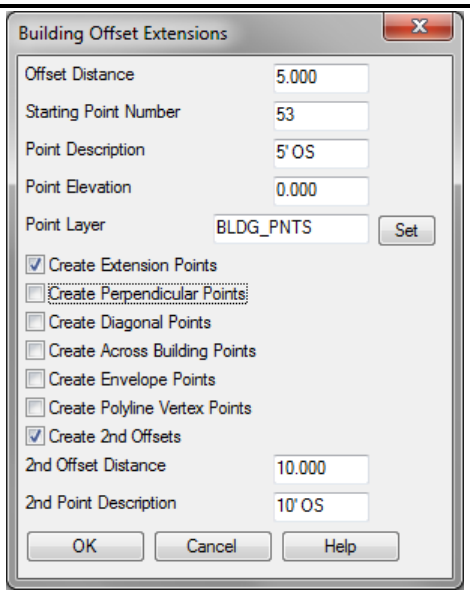


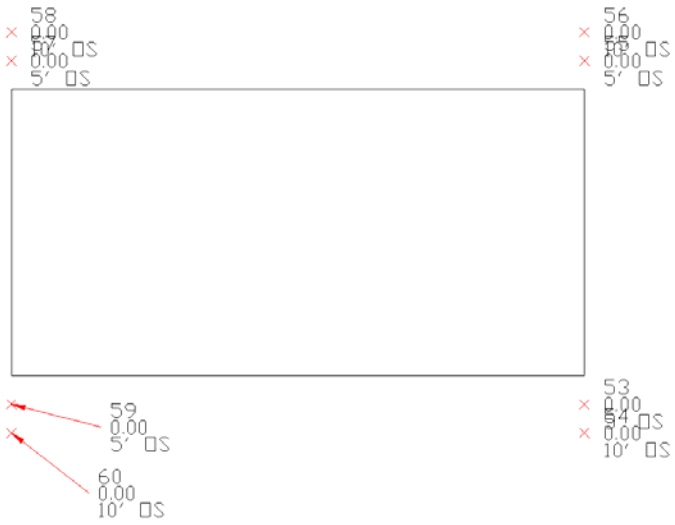



Building Offset Extensions
Offset Distance
5.000
Starting Point Number
9
Point Description
5' OS
Point Elevation
0.000
Point Layer
BLDG_PNTS
Set
Create Extension Points
Create Perpendicular Points
Create Diagonal Points
Create Across Building Points
Create Envelope Points
Create Polyline Vertex Points
Create 2nd Offsets
2nd Offset Distance
10.000
2nd Point Description
10' OS
OK
Cancel
Help




Building Offset Extensions
Offset Distance
5.000
Starting Point Number
37
Point Description
5' OS
Point Elevation
0.000
Point Layer
BLDG_PNTS
Set
Create Extension Points
Create Perpendicular Points
Create Diagonal Points
Create Across Building Points
Create Envelope Points
Create Polyline Vertex Points
Create 2nd Offsets
2nd Offset Distance
10.000
2nd Point Description
10' OS
OK
Cancel
Help

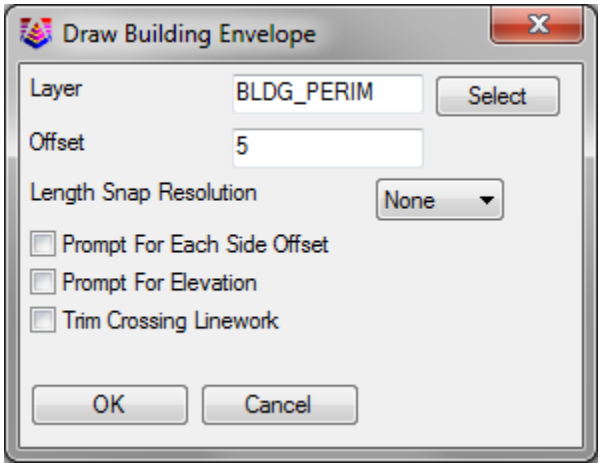




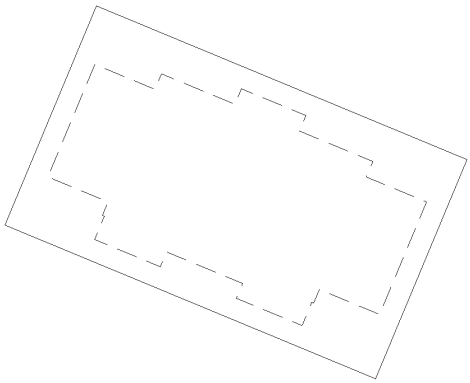
The Building Offset Extension command is available in Carlson Survey under the Cogo menu, in Construction under the Survey menu or in Takeoff under the Points menu.

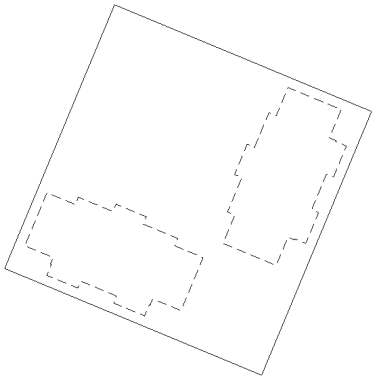
5 Draw Building Envelope Polyline

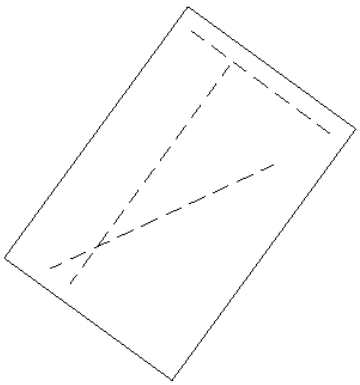
The Draw Building Envelope Polyline command will create a closed, 4-sided polyline around one or more lines or polylines. The new polyline can be created with a consistent horizontal offset distance or can vary for each side.



Several examples of original lines and polylines are shown below. The existing linework is shown dashed and the newly created Building Envelope Polyline is continuous and has been drawn at a 5’ offset.





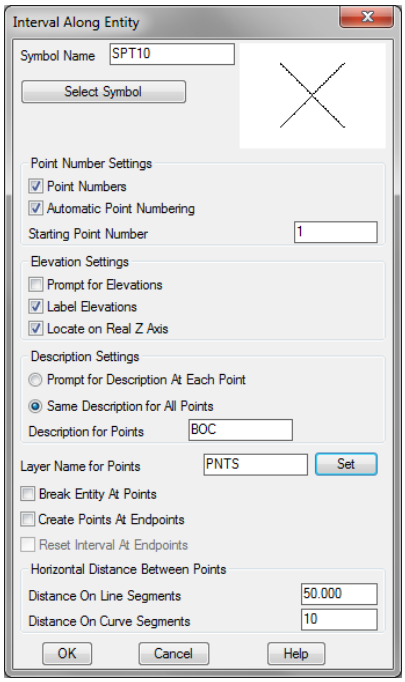


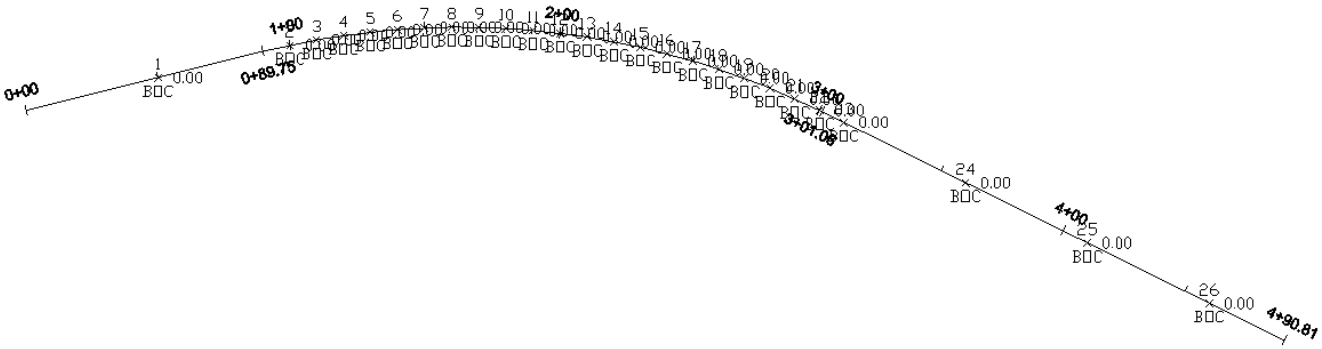
The Draw Building Envelope Polyline command is available in Carlson Civil under the 3D Data menu, in Construction under the Elevate menu or in Takeoff under the Draw menu.

6 Interval Along Entity

The Interval Along Entity command this command allows you to set Carlson points along a polyline by specifying different intervals for line and arc/curve segments.

An example of points created along a centerline and using these settings is shown below:





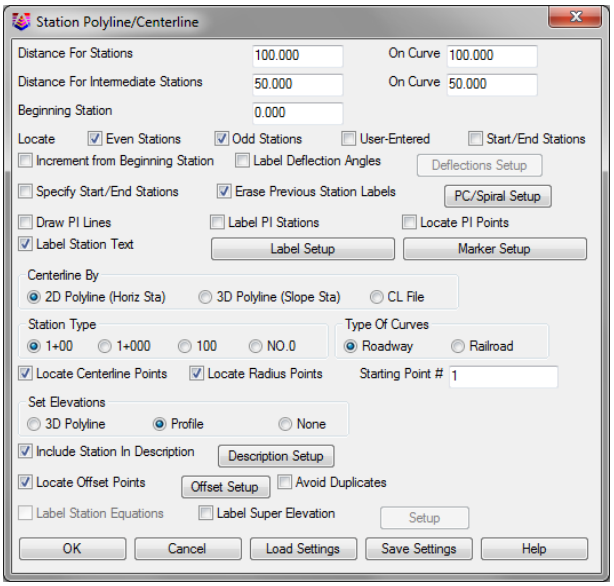
The Interval Along Entity command can be found in Carlson Survey under Cogo > Interpolate Points and in Construction under Survey > Interpolate Points. In Takeoff, it can be found under the Points > Interpolate Points menu.

7 Station Polyline/Centerline

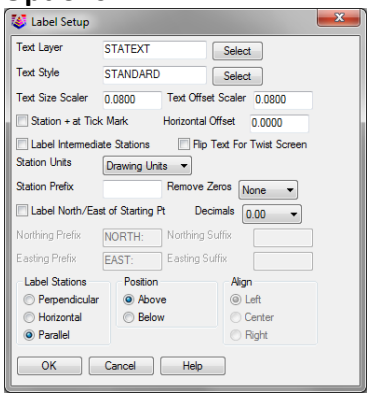
As its name suggests, this command can be used to station a standard 2D polyline entity, 3D polyline (along a slope) or along the alignment of a saved Centerline (.cl) file.

The command can also be used to set points along the centerline and on offset. Elevations for points along the centerline can be assigned by 3D Polyline or by selecting a Carlson Profile (.pro) file.

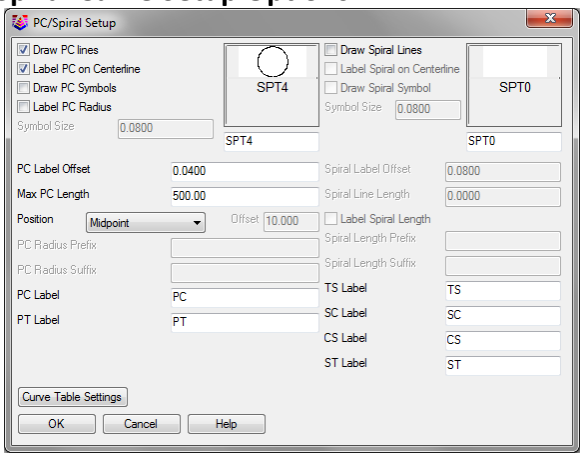
Horizontal offset distance for offset points can be set by selecting a polyline or by entering distances left and right of the centerline. Elevations for offset points can be set by slope or vertical offset.



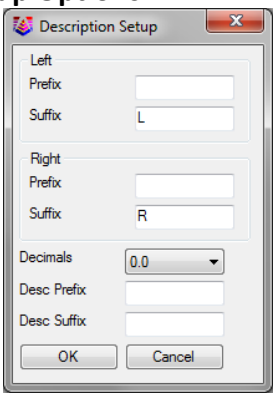
Label Setup Options



PC/Spiral Curve Setup Options

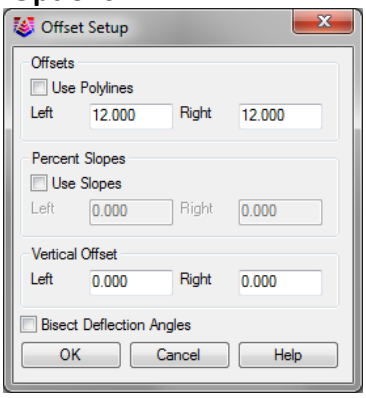


Description Setup Options



These settings will be applied if the option to **Locate Centerline Points** has been turned ON.

Offset Setup Options



These settings will be applied if the **Locate Offset Points** option has been turned ON.

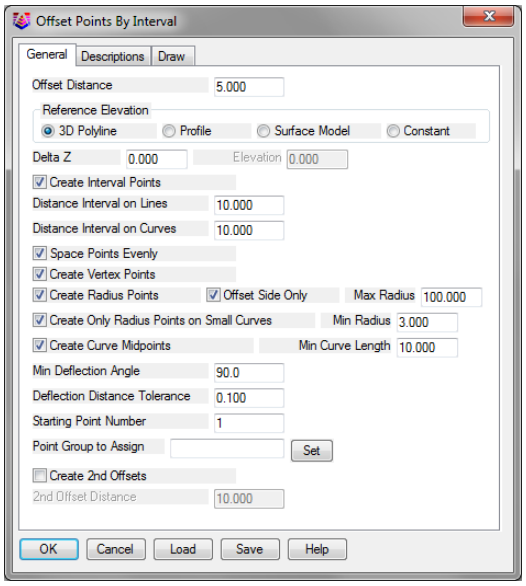
The Station Polyline/Centerline command can be found under the Centerline menu in Survey and Civil and under the Roads menu in Construction and Takeoff.

8 Offset Points by Interval

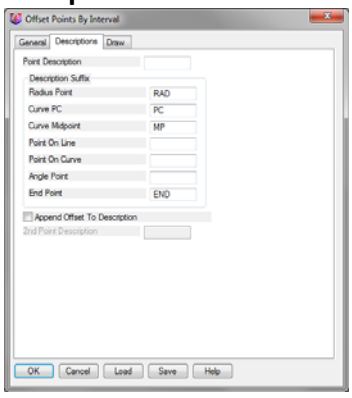
This command can be used to create as many as 2 new Carlson points, offset left and right, at specified intervals along any polyline entity or along the alignment of a saved Centerline (.cl) file. The interval between points can be set differently for line and curve segments.

Elevations for new points can be set using a 3D polyline, a Carlson Profile (.pro) file, from a surface model (.tin) file or at a constant elevation.

General Tab Options



Description Tab Options



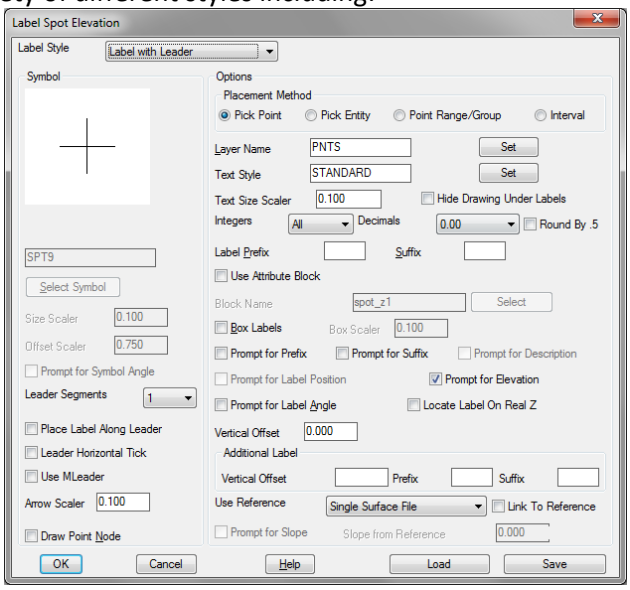
Draw Tab Options

The Offset Points by Interval command can be found in Carlson Survey under the Cogo menu and in Construction under the Survey menu. In Takeoff, it can be found under the Points menu.

9 Draw Spot Elevations

This command can be used to label spot elevations using a variety of different styles including:

- Label with Leader
- Label with Symbol
- Carlson Point
- Label Decimal on Point
- Label Insertion on Point
- Label Only
- Node Only



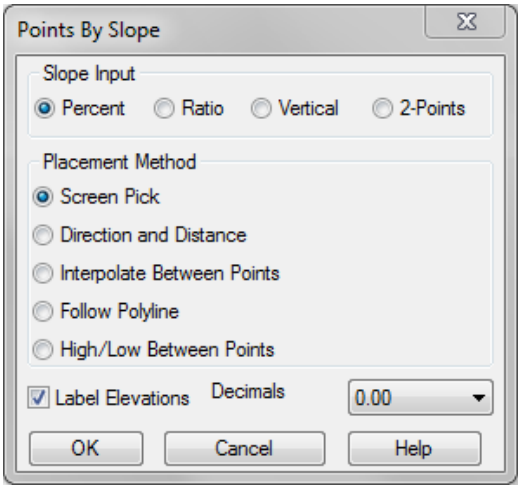
Elevations for spot elevations can be entered manually or by referencing Carlson Surface (.tin) files.

If the **Link to Reference** option is selected, you can use the **Move Spot Elevation** command to move the spot elevation and have the elevation updated based on the referenced surface and new location.

The Draw Spot Elevations command can be found in Carlson Civil under 3D Data > Spot Elevations and in Construction under Surface > Spot Elevations. In Takeoff, it can be found under the Points menu.

10 Points By Slope

This command gives you a variety of ways to create new Carlson points calculated from a starting reference location and elevation (X, Y, Z).



The slope from the Reference Point can be entered in percent, ratio or vertical change format. The 2-Points Slope Input method can be used if you simply want to match the slope between two points.

Placement Methods

- Screen Pick: Prompts for a Reference Point and screen-picked location of the new point. The elevation of the new point calculated using the measured, straight-line distance between the Reference Point and the new point.
- Direction and Distance: Prompts for a Reference Point and then a dragged direction from the Reference Point and a manually entered the distance. The elevation of the new point is calculated using the measured, straight-line distance between the Reference Point and the new point.
- Interpolate Between Points: Prompts for two Reference Points, a slope and number of interpolated points to be created between the two Reference Points. The elevation of each new point is calculated using the measured, straight-line distance between the Reference Point and the new point.
- Follow Polyline: Prompts for a Reference Point and a screen-picked location for the new point. Both points should be located along a polyline. The elevation of the new point is calculated using the distance along the polyline from the Reference Point to the new point.
- High/Low Between Points: Prompts for two Reference Points and slopes coming from each Reference Point. The new point will be located and the elevation will be calculated using the point of intersection of the two slopes.

The Points by Slope command can be found in Carlson Civil under 3D Data > 3D Points.