

## SurvCE – Manually Entering an Alignment

### Overview

Bringing alignment information into the data collector provides an opportunity to reference collected information by station and offset as well as layout plan elements.

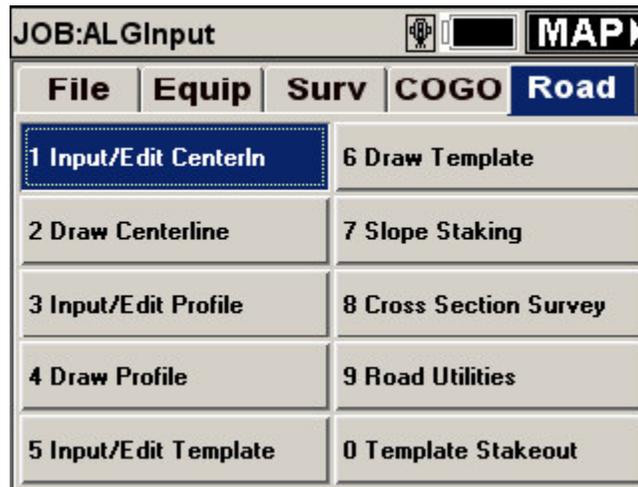
This procedure takes you through the steps to manually enter an alignment into a data collector running SurvCE software and edit an existing centerline.

### Creating a Centerline

1. Create an alignment report from the design application to get the starting station, key coordinates, and geometry data to enter and check the results.
2. Print the report for reference in the field.

Keeping this report handy in the field will allow verification of your orientation.

1. Create or select a data collector job.
2. Click on the **Road** tab.



3. Click on **1 Input/Edit Centerline**.  
The last centerline entered (if available) will be displayed.
4. To enter a new centerline, click **Clear**.  
This will zero all the entries in the Input-Edit Centerline box.
5. To load an existing alignment, click on **Load**.

**Input-Edit Centerline** Clear Close

None...

Start Pt ID:    Nor: 0.0000

Start Sta:  Eas: 0.0000

CL Element	Length	Ending Station

Load Add Pick PL Save As

**Input-Edit Centerline** Clear Close

C:\Sur..o\Data\SlopeStakingDemo.cl

Start Pt ID:    Nor: 10000.0000

Start Sta:  Eas: 10000.0000

CL Element	Length	Ending Station
Line	500.0000	500.0000
Curve	100.0000	600.0000
Line	200.0000	800.0000

Load Add Edit Remove Save As

- Reference the alignment report.

If you have previously entered the beginning point into the data collector, enter it in the *Start Pt ID* field, otherwise enter the coordinates in the *Nor: and Eas:* fields.

- Enter the starting station.

8. Click the **Add** button to add definition.
9. Select the first alignment element type.

### Adding a tangent (Line) element

1. Select **Line**.  
 Note and double-check the starting station and coordinates to make sure these numbers were entered correctly before continuing on.
2. Enter the tangent definition.
3. If you have a point defined where this portion of the line will end, click on the **List** icon or the **Map** icon and pick the point you want to use.
4. If no point exists, enter the **Length**.
5. Enter the bearing in the *North Azimuth* field.  
 Enter the bearing using *N dd.mmss E* format, for example: *N 81.5838 W*  
 SurvCE will automatically calculate the **North Azimuth** for you.

- Enter the length and bearing.

**Line(Tangent) Element** Cancel

Start Pt ID:                      Sta: 10+00.0000  
 Nor: 636041.4714                Eas: 952938.0181

End Pt ID:  ☰ ✎

End Station:                      Northing:  
                     

Length:                              Easting:  
                     

North Azimuth:  OK

Notice that SurvCE calculates the End Station and the Northing and Easting coordinates of the station that was just created.

- Compare the design print out to what is calculated in SurvCE.

If the values don't match, click on **Cancel** to re-enter the tangent section.

- When the values match, click **OK**.
- This will open the Input-Edit Centerline box again.

SurvCE added the line section just entered under the **CL Element**.

**Input-Edit Centerline** Clear Close

C:\SurvCEDemo\Data\CTRP6.cl

Start Pt ID:  ☰ ✎ Nur:

Start Sta:  Eas:

CL Element	Length	Ending Station
Line	133.3990	1133.3990

Load Add Edit Remove Save As

### Adding a Curve Section

- Click the **Add** tab.
- Select **Curve**.

The Curve Element box opens.

Curve Element		OK	Cancel
PC Sta:	11+33.3990	<input type="radio"/> Left	<input checked="" type="radio"/> Right
Arc Len:	476.5840	Rad:	500.0000
Delta angle:	54°36'45"		
R Pt ID:	<input type="text"/>	Nor:	636555.1958
	<input type="text"/>	Eas:	952875.7081
PT Pt ID:	<input type="text"/>	Nor:	636325.3693
	<input type="text"/>	Eas:	952431.6588
<input checked="" type="checkbox"/> Tang. to the prev.			
Chord North Azimuth:	PT Sta:	16+09.9830	
305°19'44.5"		Confirm PC/PT	

- Verify that the *PC Sta* **matches** the PC Station that is calculated on the design printout.
- Specify which direction the curve runs, whether it's **Left** or **Right** by toggling the correct direction.

A negative (-) delta angle in the report represents a Left curve and a positive is a Right.

Enter the **Arc Len** (476.584) and **Delta angle** (54.3645) from the design print out.

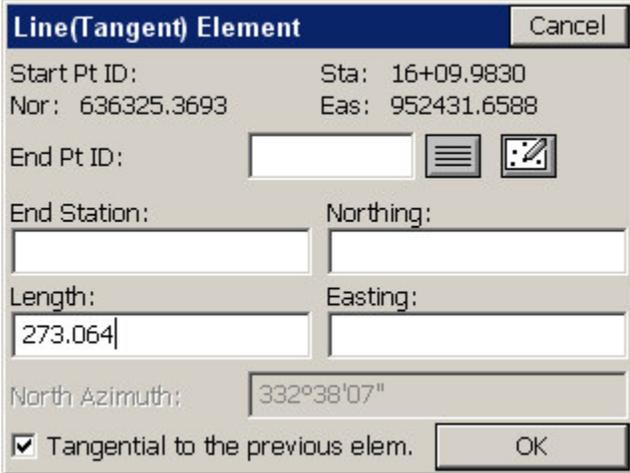
- SurvCE will calculate the **Rad** (Radius distance) and the coordinates of the **R** (Radius) point and **PT** (Point of Tangency), as well as the **PT Sta**.

If the R (Radius) point and or PT (Point of Tangency) are stored points, they may be entered to define the curve.

- In most cases, toggle the **Tang. to prev.** check box **ON**.

Only in very specific situations, would you want the previous tangent bearing to be different than the curve back tangent. In these cases, you may toggle off the **Tang. to the prev** check box to create an angle point coincident to the PC (Point of Curvature).

**NOTE:** Using only the Arc Length, Delta angle and Direction is recommended. Most radius distances are rounded and not true and will not calculate the curve data correctly.



**Line(Tangent) Element** Cancel

Start Pt ID:                      Sta: 16+09.9830  
 Nor: 636325.3693                Eas: 952431.6588

End Pt ID:                     

End Station:                      Northing:

Length:                            Easting:

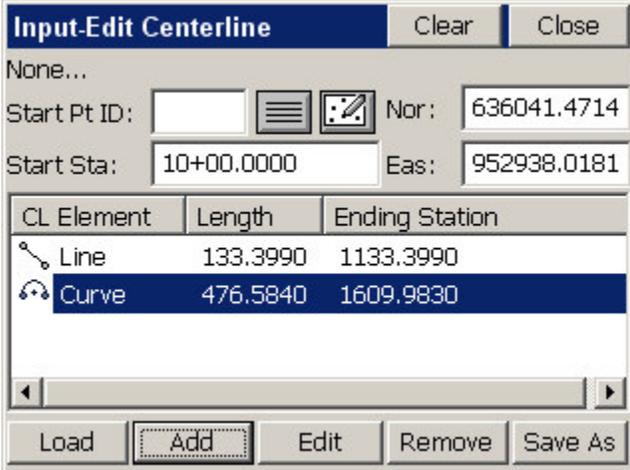
                                      273.064

North Azimuth:                   332°38'07"

Tangential to the previous elem.      OK

7. Verify that the coordinates of the R point and PT point match the design printout.
8. Click **OK**

Notice the Input-Edit Centerline box lists the CL Curve Element just entered.



**Input-Edit Centerline** Clear    Close

None...

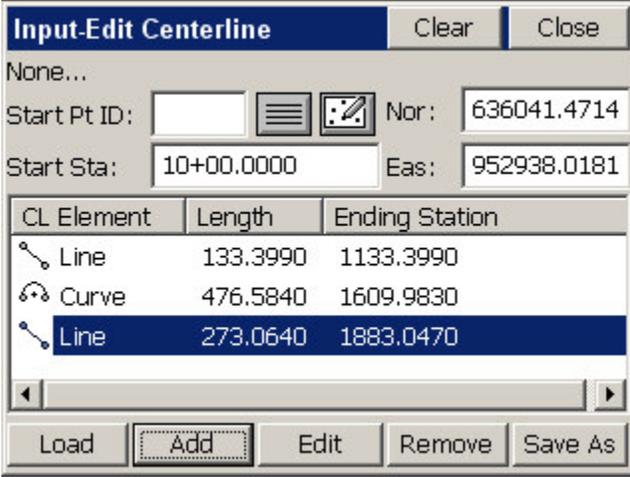
Start Pt ID:    Nor: 636041.4714

Start Sta: 10+00.0000            Eas: 952938.0181

CL Element	Length	Ending Station
Line	133.3990	1133.3990
Curve	476.5840	1609.9830

### Complete the Alignment Definition

Continue adding elements until the alignment is complete and matches the report ending station and coordinates.



Input-Edit Centerline    Clear    Close

None...

Start Pt ID:     Nor: 636041.4714

Start Sta: 10+00.0000    Eas: 952938.0181

CL Element	Length	Ending Station
Line	133.3990	1133.3990
Curve	476.5840	1609.9830
Line	273.0640	1883.0470

Load    Add    Edit    Remove    Save As

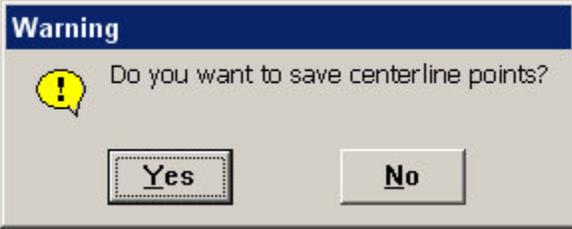
### Save the Alignment

- Click on **Save As** and key-in a name for this alignment.

This creates an **ALIGNName.ci** file in the data collector.

- Click **OK** in the Save CL File dialog to complete the process.

The following Warning dialog may appear:



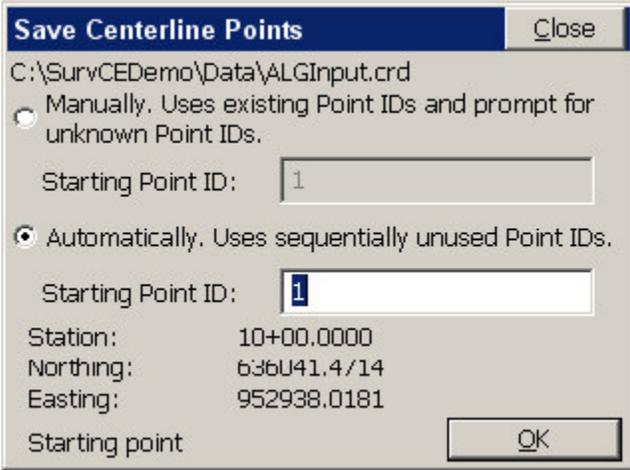
Warning

Do you want to save centerline points?

Yes    No

- Click **Yes** if you want to store the centerline points.

The Save Centerline Points box shown below will display.



Save Centerline Points    Close

C:\SurvCEDemo\Data\ALGInput.crd

Manually. Uses existing Point IDs and prompt for unknown Point IDs.

Starting Point ID:

Automatically. Uses sequentially unused Point IDs.

Starting Point ID:

Station: 10+00.0000

Northing: 636041.4714

Easting: 952938.0181

Starting point    OK

When assigning point IDs, it is recommended to select the **Automatic** option and give the first point ID in the series. SurvCE will store each centerline point starting with that number.

### ***Editing an Existing Alignment***

1. In the Input-Edit Centerline dialog, select **Load**.
2. Choose the Centerline \*.cl file
3. Use the **Add** button to continue defining the alignment
4. Select the **CL Element** and click on **Edit** to modify existing elements in the centerline
5. Click **Save As** to save the changes.

The original centerline may be updated by overwriting the same file, or retained by saving the modified centerline to a new name.

For questions or comments on this tech note, contact your regional CAE Support Coordinator or the WSDOT CAE Help Desk at (360) 709-**8013**.