

CADD NOTE 14

This CADD Note explains the process of entering a stadia survey into AutoCAD using the Eagle Point **COGO** Product.

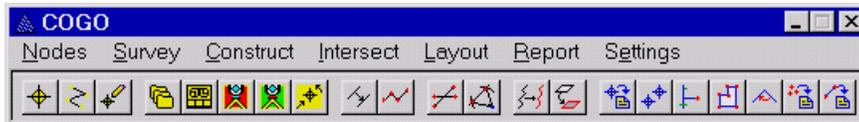
COGO

MENU: **Eagle Point, Products, COGO**

COMMAND: **epcg**

ICON: 

This will load the COGO (coordinate geometry) menu and toolbar. The tasks listed below assume you are working from this menu and toolbar.



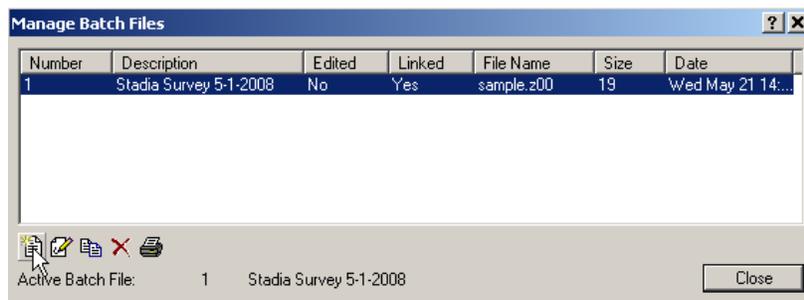
Setup Batch Recording

MENU: **COGO, Survey, Manage Batch File**

COMMAND: **batchman**

ICON: 

A file can be created that will record the survey data that you enter so that it can be edited or replayed at a later time. To set up this file, start the command using one of the methods above.



Click the new icon  and enter a description for the file.

An example is shown to the left.

Click .

This file will be an Eagle Point SDMS file (Survey Data Management System) that can later be viewed, edited or printed using the **Edit Batch File** feature on the **COGO, Survey** menu

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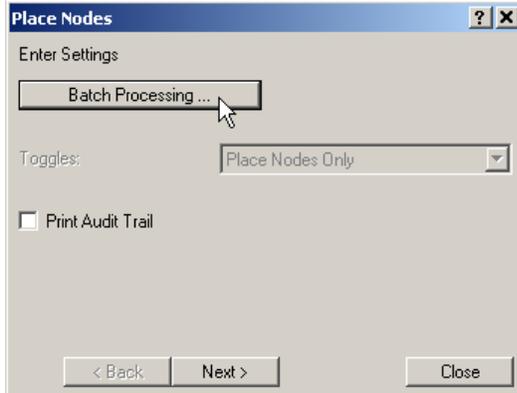
Establish First Instrument Point

MENU: **COGO, Nodes, Place Nodes**

COMMAND: **placenode**



The first instrument point occupied during the survey must be placed in the drawing using **Place Nodes**. Use one of the above methods to begin the process.

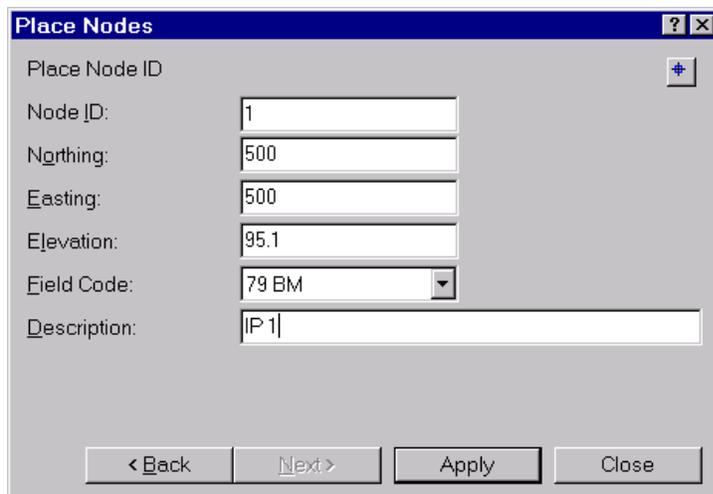
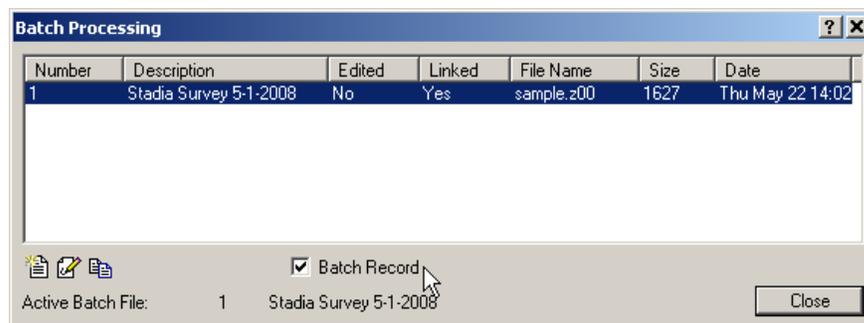


If the screen at the bottom of this page comes up first, click **< Back** to return to the screen on the left..

If you are recording your data entry, click on **Batch Processing** ;

make sure desired batch file is selected; make sure the “Batch Record” box is checked and then click **Close** .

Click **Next >** .



Enter a Node ID.

The *Northing* and *Easting* coordinates (assumed or known) may be entered manually or can be picked graphically by clicking on the

PIC icon button  .

Enter the elevation of the IP hub. Select a field code and Enter a description.

Click **Apply** .

Click **Close** .

Entering Survey Shots

MENU: **COGO, Survey, Field Data Traverse**

COMMAND: **fieldtrav**



This routine allows you to place side shots, or field data. Start the routine using one of the methods above.

Setting Options

Before entering data using this routine, select the **Entry Options** button to match the data fields in the dialog box with the type of data collected during the survey. Several options are available depending upon the equipment and methods used to collect data and make turns.

The *Direction Type* will normally be **North Azimuth** if turns are made using the actual Back Azimuth to a known point.

If instead, 0°00'00" is used as the Back Azimuth to a known point during a turn regardless of the actual Back Azimuth, then **Backsight Node ID and Angle** should be selected. Along with the *Angle Type*, which is normally **Angle Right**.

If you are using the 0°00'00" Back Azimuth method to make turns, the sideshots for the first instrument setup must be entered using the **North Azimuth Direction Type**. The sideshots taken from the rest of the instrument points will be entered using the **Backsight Node ID and Angle Direction Type**.

Distance Options: This must be set to **Slope Distance** if you want the software to reduce the notes from the Foresight readings. If the notes are already reduced you may select **the Horizontal Distance** option

Elevation Options: Depending upon the instrument, this should be set to either **Zenith Angle** (0° is with the scope pointing straight up) or **Horizon Angle** (0° is with the scope pointing level with the horizon).

Instrument/Target Height: Check this if you want the software to reduce the elevations from the foresight readings. Leave it unchecked if you will be entering the absolute elevations from notes that are already reduced.

Draw Lines for Sideshots: This is normally left unchecked. If it is checked, then there will be a line drawn from the instrument point to every sideshot, which can clutter up the drawing.

Click **OK**.

Entering Survey Shots

Entering Side Shots

To enter data simply fill in the data fields in the **Field Data Traverse** window.

Occupied Node ID: This is the first instrument point number. The point should have already been placed in the drawing using the **Place Nodes** feature.

Foresight data is entered next.

North Azimuth: This is the horizontal angle for the point. The units for the angles will be the current Eagle Point Units setting found in EP menu **System, Units**.

Slope Distance: This is the stadia distance to the point.

Zenith Angle (or horizon angle): This is the vertical angle for the point. The units for the angles will be the current Eagle Point Units setting found in EP menu **System, Units**.

Instrument Height: This is the height that the instrument is above the elevation of the survey point being occupied. **This is not the elevation of the instrument's line of sight.**

Target Height: This is the foresight reading on the rod for the point. Pressing the **[ENTER ↵]** key while in this field will place the point in the drawing. This may or may not be the desired action. See discussion of the **Next Leg** and **Sideshot** buttons later in this section.

Field Code: This is an Eagle Point feature, which determines what symbol to use and what drawing layer to place the point into.

Node Description: This is an alphanumeric description of your choosing for the point.

If this is a sideshot (i.e., not part of the horizontal traverse circuit), click on the **Sideshot** button. The point will be added to the drawing. To see it, you may need to do a *Zoom -> Extents* in AutoCAD. You then can continue to add sideshots by repeating the above steps.

If this is a new instrument point, click on the **Next Leg** button to indicate to the software that the point is part of the horizontal traverse circuit and that the instrument point will change (refer to “Making a Turn” section below).

If neither the **Next Leg** or **Sideshot** button is clicked, the software defaults to the last type of data point entered.

The **UNDO Icon**  in the lower left corner will allow you to undo the points that have already been placed one point at a time. It also removes the points from the batch SDMS file if one is being recorded.

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Entering Survey Shots

Making a Turn (Next Leg)

If you make the turn by entering the actual Backsight Azimuth, then leave the *Direction Type* in the **Entry Options** menu set to **North Azimuth**.

If you make the turn by setting the horizontal angle to 0°00'00" when backsighting the previous point, then click the **Entry Options** button and change the *Direction Type* to **Backsight Node ID and Angle**.

Field Data Traverse

Occupied Node ID: 1

Direction Node ID: NE90.00000000

Foresight

North Azimuth: 270

Slope Distance: 200

Node ID: 2

Zenith Angle: 90

Instrument Height: 5.42

Target Height: 10.89

Absolute Elevation: 96.53000000

Field Code: 79 BM

Node Description: IP 2

Entry Options... Batch Processing...

Next Leg Sideshot Close

When making a turn, enter the foresight reading for the new instrument point as you would for any foresight shot, except click on the **Next Leg** button to place the point in the drawing instead of the **Sideshot** button.

Upon clicking the **Next Leg** button, you will notice that the Occupied Node ID field has changed to the new Instrument Point (IP) and that a line has been drawn connecting the previous IP with the new IP.

Field Data Traverse

Occupied Node ID: 2

Direction Node ID: NE90.00000000

Foresight

North Azimuth: 270

Slope Distance: 200

Node ID: 7

Zenith Angle: 90

Instrument Height: 5.42

Target Height: 10.89

Absolute Elevation: 96.53000000

Field Code: 79 BM

Node Description: IP 2

Entry Options... Batch Processing...

Next Leg Sideshot Close

You can then begin entering new sideshots from this new instrument point.

Be sure to measure and re-enter the instrument height since it most likely will change.

When done, simply click on **Close**.

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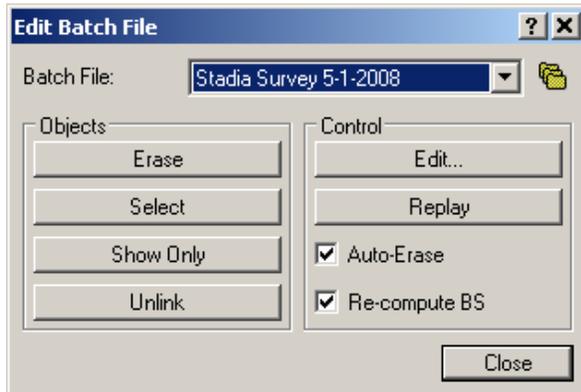
Editing Survey Shots

MENU: **COGO, Survey, Edit Batch File**

COMMAND: **editbatch**

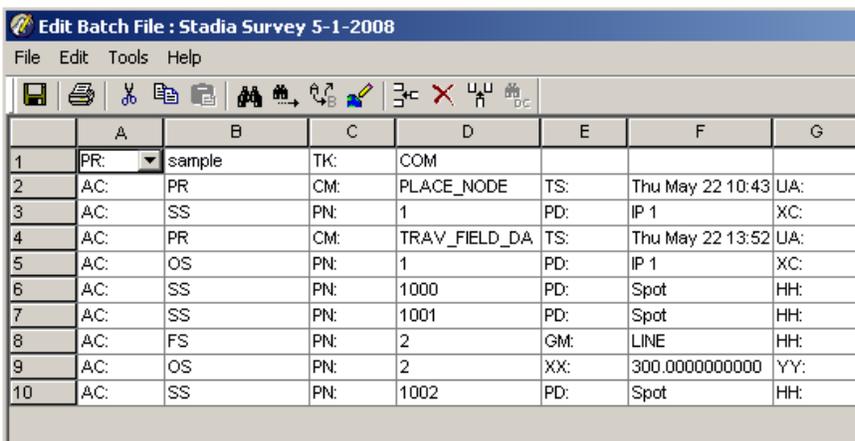
ICON: 

If the batch recording option was used while entering your survey, you can edit the batch file (i.e., SDMS file) and correct any mistakes made while entering the data and then re-reduce the survey data. Start the edit process using one of the methods above.



Select the desired batch file from the drop-down list.

Click **Edit...**.



	A	B	C	D	E	F	G
1	PR: 	sample	TK:	COM			
2	AC:	PR	CM:	PLACE_NODE	TS:	Thu May 22 10:43	UA:
3	AC:	SS	PN:	1	PD:	IP 1	XC:
4	AC:	PR	CM:	TRAV_FIELD_DA	TS:	Thu May 22 13:52	UA:
5	AC:	OS	PN:	1	PD:	IP 1	XC:
6	AC:	SS	PN:	1000	PD:	Spot	HH:
7	AC:	SS	PN:	1001	PD:	Spot	HH:
8	AC:	FS	PN:	2	GM:	LINE	HH:
9	AC:	OS	PN:	2	XX:	300.0000000000	YY:
10	AC:	SS	PN:	1002	PD:	Spot	HH:

Make desired corrections to the data.

Select *File, Save* from the menu.

Select *File, Exit* from the menu.

Back in the “Edit Batch File” window, click **Replay**. The survey will be erased and re-reduced.

Click **Close**.