TPC Desktop Series

Traverses Learning Guide

2/20

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Learning Center: Traverses
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Typography
We will be using the following typography to distinguish items in the text:

[Enter] Brackets indicate keys on the keyboard.

*italics* Italics are used to highlight words for more emphasis.

Lot 2 Numbers or text that you enter.

System Requirements
This version of TPC Desktop requires Windows 10 / 8.1 / 8 or later. We recommend you have 2 GB of RAM 32-bit OS) 4 GB RAM (64-bit OS) and 60 MB of free hard disk space in which to install the program. **An internet connection is required for program validation.**

Important Licensing Information
Our License Agreement allows you to use TPC on only one computer at a time unless you purchase additional licenses. We do offer one courtesy installation for an additional home or field computer, *but not for a second user* and assuming that the two programs are not being used at the same time. To request a courtesy license contact Traverse PC.
This chapter demonstrates:
- Included Formats
- Display Sequence
- Edit Sequence
- OP Sequence
- Other Options
- Saving and Recalling Formats

Overview

The Traverse View is designed on a spreadsheet format to allow you to enter, edit and review data however you choose. It is completely user-customizable so you never have to settle for doing things the way someone else thinks you should do them. It can display any number of fields so you can see at a glance any information you need. This makes it an extremely powerful and flexible data management tool.

In this chapter, you will learn how to use the formats that come with your program, how to change these formats, and how to create your own. This will allow you to make maximum use of TPC’s data tools in the Traverse View.

Getting started

1) From the Tasks Manager, choose Sample Surveys.
2) Double-click the LEARN FORMATS.TRV file then choose File | Save Survey As.
3) Enter the name Formats and choose Save. If prompted to replace the existing file, choose Yes.
**Included Formats**

Traverse PC includes several Traverse View formats to help you get started quickly and easily. These are great starting points for learning how the Traverse View works and for deciding what you want to include in your own formats. These formats have names that describe their function in order to help you know which one to use for each traverse. They are:

- Alignment
- Boundary
- Control 2D
- Control 3D
- Coordinates
- Deed
- Deed w/curves
- Default
- Foundation
- GLO
- GPS 2D
- GPS 3D
- PLSS
- Profile
- Topo w/benchmark
- Topo w/HI
- Xsection

The first time you open any traverse in TPC Desktop, you will see the Traverse dialog. Enter a Name, Format and Settings. If you are entering data from a deed description, you might choose Deed for the Format and Property Lines for the Settings. If there are curves in the deed description, the Deed w/curves format should do the trick.

1) In the Traverses Manager, choose Tools | Insert New Traverse | Append to End.

2) In the New Traverse dialog type Deed Data in Name and choose Deed w/curves and Property Lines from their respective lists.

3) Choose OK.

Your Traverse View should now look something like this.
Traverse View Formats

Each Traverse View format provides you with different options. Let’s take a look at what is available in each of the standard formats. Keep in mind that you can change these formats or create your own formats to suit your needs. Each format includes a Point and Type column, followed by the following:

<table>
<thead>
<tr>
<th>Format</th>
<th>Fields</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alignment</td>
<td>Bearing</td>
</tr>
<tr>
<td>Boundary</td>
<td>Bearing</td>
</tr>
<tr>
<td>Control 2D</td>
<td>SlopeDist</td>
</tr>
<tr>
<td>Control 3D</td>
<td>SlopeDist</td>
</tr>
<tr>
<td>Coordinates</td>
<td>Northing</td>
</tr>
<tr>
<td>Deed</td>
<td>Bearing</td>
</tr>
<tr>
<td>Deed w/curves</td>
<td>Bearing</td>
</tr>
<tr>
<td>Default</td>
<td>SlopeDist</td>
</tr>
<tr>
<td>Foundation</td>
<td>NorthAz</td>
</tr>
<tr>
<td>GLO</td>
<td>True Bearing</td>
</tr>
<tr>
<td>GPS 2D</td>
<td>Desc</td>
</tr>
<tr>
<td>GPS 3D</td>
<td>Desc</td>
</tr>
<tr>
<td>PLSS</td>
<td>True Bearing</td>
</tr>
<tr>
<td>Profile</td>
<td>Station</td>
</tr>
<tr>
<td>Topo w/benchmark</td>
<td>SlopeDist</td>
</tr>
<tr>
<td>Topo w/Hi</td>
<td>SlopeDist</td>
</tr>
<tr>
<td>Xsection</td>
<td>SlopeDist</td>
</tr>
</tbody>
</table>

Note: Every format starts with Point and Type even though they are not shown here. These fields are included automatically in every format, even the ones you create.

If you haven’t changed anything since you opened the **Deed Data** traverse, the active field should be the **Point label** 11. Press your [Enter] key and the active field is now **Type**. [Enter] again and you are in **Bearing**. [Enter] once more and you are in **Horiz Dist**. [Enter] again and you are in **Radius**. Again and you are in **Arc Length**. Once again and you are now in the **Bearing** field for point 12. At this point, you can hit [Enter] again and again and the active field will toggle between **Bearing**, **Horiz Dist**, **Radius** and **Arc Length** for point 12 until the appropriate data is entered. This action is also controlled by the Traverse View Format and therefore by you.

We will look at how you can make the Traverse View do what you need it to do.
Display Sequence

The Display Sequence controls which fields are displayed in the Traverse View and the sequence in which they are displayed.

1) Choose View | Format View and left-click the Format tab.

2) These are the settings that are controlling how the Deed Data traverse looks and acts. They were set earlier when you selected the Deed w/curves format in the Traverse dialog.

The Display Sequence determines which fields are displayed in the Traverse View. The list on the right tells you what each code does. The first two columns in the view (Point and Type) are automatically included before the codes that are set in the Display Sequence. Therefore, the Display Sequence BHRCYXDX gives us a Traverse View with the Point, Type, Bearing, Horiz Dist, Radius, Arc Length, Northing, Easting and Description fields as we saw in our Deed Data traverse.

3) To switch from Horiz Dist to Slope Dist and Vert Angle, replace the H with SG in the Display Sequence.

Hints

Note that the codes in the chart are case-sensitive. The letter ‘C’ gives you Arc Length but ‘c’ gives you PC->PR. Make sure you use the correct case (upper or lower) so that you get the fields you intended.
Traverse View Formats

**Edit Sequence**

The **Edit Sequence** controls which fields the cursor goes to automatically, in sequence when you press [Enter] or [Tab] in the Traverse View.

The **Edit Sequence BH** tells us that the cursor will automatically move between the **Bearing**, **Horiz Dist**, **Radius** and **Arc Length** fields.

▶ **Hints**

- Do you remember the cursor toggling between the **Bearing**, **Horiz Dist**, **Radius** and **Arc Length** fields for point 12? It did that because of this **Edit Sequence**.
- You can jump out of the **Edit Sequence** in the Traverse View at any time by using a cursor key or clicking in the field you want to edit. Each time you press [Enter] or Tab, you will jump to the next field on the line until you get to one of the **Edit Sequence** fields. At that point, you will jump to the next field in the **Edit Sequence**.

To switch from **Horiz Dist** to **Slope Dist** and **Vert Angle**.

1) Replace the **H** with **SG** in the **Edit Sequence**.
**OP Sequence**

The **OP Sequence** controls what point types are added to a traverse automatically following any occupied point. The first point in a traverse is *always* an occupied point but the **OP Sequence** determines what comes next.

If you are entering data from a deed record, you will simply want to enter data from occupied point to occupied point. In this case, you want an **OP Sequence** of FS.

If you are entering data for a topo and will be taking numerous sideshots from each occupied station, you would want BS/SS in the **OP Sequence**. (Note that we have assumed that you will be entering a backsight to start.)

If you will be entering a field traverse or a meander with very few sideshots, BS/FS should work well. (Again we assumed that you will use an initial backsight.)

**Hints**

The **OP Sequence** is not a critical element of the Traverse View Format. You can change a point type at any time so if you have an **OP Sequence** of BS/SS but don’t want any sideshots from the first occupied point, simply change the first sideshot to an occupied point in the Traverse View.

**To learn more about changing point types in the Traverse View**

1. Choose **Help | Search For Help On...** and left-click the **Contents** tab.
2. Scroll down to **Traverses** and double-click it to expand it.
3. Double-click the **Traversing** topic to expand it.
4. You’ll find topics on Starting a Traverse, Entering Data, etc.
Other Options

There are several other options available in the Traverse View Format dialog. We will look at a few of the more important ones.

To learn more about the other options not covered here

1) Press the [F1] key from the Traverse View Format dialog Formats tab.

► Copy Descriptions

This option copies any description from the previous point into the new point. This can save keystrokes when you are entering several shots with the same or similar descriptions. Because you can edit the new description at any time, it is simple to change the description to what you need. The new description is then copied to the next new point.

► Delete Raw Warning

Traverse PC will display a warning when you try to delete a point that has raw data in this traverse. You can still delete the point, but TPC is giving you a chance to change your mind if you really did not want to delete the raw data.

To learn more about raw data and inverse data

1) Choose Help | Search For Help On… and left-click the Index tab.
2) Scroll down to Raw data, highlight it and choose Display.
3) Highlight the Displaying Raw Data topic and choose Display.

► Compute Latitude/Longitude

If you will be using Latitude and Longitude in the Traverse View or if you will be entering State Plane coordinates and want to see the Latitude and Longitude in the Traverse View, you will need to open the Advanced tab.

1) Choose View | Format View and left-click the Advanced tab.
2) Turn on Compute Latitude/Longitude.
**Single Row**

The Single Row option allows you to display more data in a smaller space on the screen. Without this option turned on, the Traverse View has more of the appearance of the typical field book.

*Single Row option on*

With the Single Row option turned on, each point takes up one line in the Traverse View. The data on each line is the data that created that point. (The Bearing and Horiz Dist on the Point 2 line is the Bearing and Horiz Dist that was shot from Point 1 to Point 2.) Depending on the Description Width entered, there may not be enough room to display all of the Description.

*Single Row option off*

With the Single Row per Point option turned off, each point takes up two lines in the Traverse View to mimic the field book. The data above each point number is the data that created that point. (The Bearing and Horiz Dist above Point 2 is the Bearing and Horiz Dist that was shot from Point 1 to Point 2.) Because two lines are available for each point, more of the Description can be displayed with less Description Width.

Note that the Single Row option can also be turned on or off in the Traverse View by toggling the Single Row per Point option in the View menu.
Saving and Recalling Formats

You can modify existing formats and save the changes or you can create entirely new formats.

**Saving a Format**

1) From the Traverse View Format dialog Format tab, choose Save Format.
2) Type Deed w/Slope and choose OK.
3) You could have selected one of the formats in the list and chosen OK. Your format would have replaced the format that was previously saved with that name.
4) Choose OK from the Save Format dialog.

**Hints**

The Save Format dialog looks for a saved format that matches the format you are saving. If it cannot find a match, it displays Custom... as the format name.

5) Choose OK from the Traverse View Format, Format tab to apply the changes to the Traverse View.

**Recalling a Format**

You can recall an existing format at any time. Normally, you will choose the format when you initially create the traverse. If you chose the wrong one or if you simply want to recall a different format along the way, you can do so easily.

1) Choose View | Format View from the Traverse View and left-click the Format tab.
2) Choose Recall | Format.
3) Pick the format name you wish to recall and choose OK. You can also just start typing the name of the format and TPC will list any formats that match.
4) Choose OK from the Traverse View Format dialog.

The Traverse View will now reflect the settings of the format you recalled.
This chapter demonstrates:

- Starting a new survey
- Adding a traverse to a survey
- Entering record data
- Closing a traverse
- Entering curve data
- Viewing a traverse
- Checking lot closures
- Recalling common points
- Viewing a survey
- Reviewing surveys, traverses and files
- Ending a survey
Entering Record Data

Overview
In this chapter, you will enter boundary data for two lots. TPC will compute the closure error and area for each lot.

Getting Started
You will find that entering the lot dimensions is less confusing if you take the time to number the lot corners before you enter data. In the following diagram, the corners are numbered 1 through 8, starting with the southwest corner of lot 2.

TPC does not need the lot numbers defined ahead of time. As you enter data, it will automatically assign a number to each point. However, in this example you will be using points created in one lot to define parts of adjacent lots. If the lot corners are numbered ahead of time, you can refer to your map when determining which numbers to recall. This should become clear as soon as you enter the data for lot 3.
**Starting a New Survey**

1) From the desktop menu choose **File | New Survey** and left-click the **Survey** tab. If you have a file open and have made any changes since you saved the current survey, TPC will ask if you want to save the current survey before you proceed.

2) Click the **Browse** button, enter **Record Data** in the **File name** field and choose **Save**.

3) TPC will re-display the **Survey Information** dialog with the correct path and **Filename**.

4) Fill in the rest of the fields as shown here.

5) Choose **OK**.

The **Survey Information** bar in the Tasks Manager displays the information you just entered for this survey.

Any time you open this survey in the future, you can check this information in the Tasks Manager to make sure you have the survey you want.
Add a Traverse to the Survey

You will start this survey by entering the data for the first lot, Lot 2.

1) Double-click any blank line in the Traverses manager to display the New Traverse dialog.

2) Type Lot 2 for the Name and press [Tab] to advance to the next field.

3) Using the mouse, left-click the down arrow on the right side of the Format list to display the list of pre-defined formats. Left-click Deed w/curves. This pre-defined format includes grid bearing, grid distance, radius, arc length, coordinates and description. In a previous chapter you learned how to change these pre-defined formats and add your own.

4) For Settings, choose Property Lines.

5) Match the Drawing Options shown here.

6) Choose OK. You will see the following Traverse View.

Note: If you continue to select Deed w/curves for the Format of new traverses, TPC Desktop will start using Deed w/curves as the default. This is called sticky logic.
Entering the Lot 2 Data

TPC displays 0.000, 0.000 as the coordinates of point 1.

1) Press [Enter] until TPC automatically adds the next point (2) to the traverse and highlights the grid bearing to point 2.

2) If the Drawing View is not displayed, initiate it by choosing Window | Drawing View from the desktop menu. This will allow you to watch the drawing develop as data is entered in the Traverse View.

3) To see both views at the same time, choose Window | Tile Horizontally.

4) Type 190 in the Grid Bearing column for N 90°E and press [Enter] (when entering bearings, they are preceded by the quadrant 1=NE, 2=SE, 3=SW and 4=NW). Type 284.88 in the Grid Dist column and press [Enter] three times to move to the Grid Bearing to point 3.

5) Enter 123.27 for the grid bearing, 163.5 for the grid distance to point 3 and [Enter] to the Grid Bearing to point 4.

6) Enter 390 for the grid bearing, 291.03 for the grid distance to point 4 and [Enter] to the Grid Bearing to point 5.

7) Enter 330.4 for the grid bearing 14.08 for the grid distance to point 5 and [Enter] to the Grid Bearing to point 6.

As you enter data, TPC computes the position of the foresight, adds another point to the traverse, automatically numbers the point by adding 1 to the previous point label and highlights the new point.
Closing the Lot 2 Traverse

The last point that was added to this traverse was point 6. This is the closing point for this traverse. It is a unique point with a unique set of computed coordinates. This allows TPC to check for error in the property description. If there were no error in the property description, the computed coordinates of point 6 would be the same as the initial point 1. In fact, if there were no errors in the property description, you could recall point 1 to end the traverse. If however, there is any error in the property description, and there usually is some small error, comparing the computed coordinates of point 6 with the coordinates of point 1 will identify how much error there actually is.

In order to help you identify point 6 as the closing point and to identify it as being associated with point 1 we will change its point label from 6 to 1:1. There is nothing special about the point label 1:1, it’s just a convenient notation.

1) Highlight point label 6, type 1:1 and press [Enter] twice.
2) Enter 320.341 for the grid bearing and 147.27 for the grid distance to point 1:1.

Your Traverse View should look something like this.
Entering the Curve Data Between Points 5 and 1:1

1) Highlight the **Radius** cell for point 1:1 and enter **-420**. The minus sign is used to designate a counterclockwise curve direction.

TPC will compute the curve, display the radius and arc length and display a **PC** and **PT** next to points 5 and 1:1, indicating that they are part of a curve.

🔗 **To learn more about entering horizontal curves**

1) Choose **Help | Search For Help On...** and left-click the Index tab.
2) Double-click Centerlines / Alignments.
3) Left-click **Entering Horizontal Curves**.

**Viewing Lot 2**

As you have been entering data in the Traverse View, the drawing is being created in Drawing View. You’ll learn more about this in the **Drawing Learning Guide**.

You may need to zoom the drawing to see the details shown here.

1) In the Drawing View choose **View | Zoom | Zoom Extents**.
Entering Record Data

Checking the Closure and Area of Lot 2

1) From the Traverse View menu choose Tools | Closure View. TPC displays the Closure View for this traverse.

The Closure View displays the linear error of 0.010 feet and the area of 1.01 Acres along with Horizontal Distance, Slope Distance, Area and other information.

▶ Closing the Closure View
1) Left-click the X in the upper-right corner of the Closure View.

Closing the Lot 2 Traverse View

1) Left-click the X in the upper-right corner of the Traverse View to close it.
2) If TPC displays the Save Drawing Changes? dialog box, choose No.
3) TPC will close the Traverse View and re-activate the Drawing View.

If you got this dialog, it’s because you opened this traverse with its own temporary drawing. In the next section you’ll create a new traverse that shares the current drawing.

▶ Closing a Traverse View

Even though the Traverse View for Lot 2 is now closed, the Lot 2 traverse and all of its data is still part of the survey. You can open the Lot 2 Traverse View any time by double-clicking the Lot 2 traverse name in the Traverses Manager.
Adding an Adjacent Lot to a Survey

1) If the Traverses Manager is not the active view, left-click anywhere on it to activate it.

Adding a traverse for Lot 3

Before you can enter the data for Lot 3, you need to add a traverse to the survey to hold the data.

1) From the Traverses Manager, choose Tools | Insert New Traverse | Append to End or press [Enter] until TPC adds a blank line to the Traverses Manager.

2) Double-click the blank line or just press [Enter] to display the Traverse dialog.

Because Increment Name for next traverse was turned on when we created Lot 2, TPC automatically created Lot 3 for the Name.

The Format, Settings and Drawing Options are remembered from the last traverse, so there is no need to change them.

3) Choose OK.

Recalling the common points

Before you start entering data for Lot 3 refer back to the diagram at the beginning of this chapter. Notice that lots 2 and 3 have two points in common, points 3 and 4. Since points 3 and 4 are already computed, you can start lot 3 by simply recalling these two points.

1) Highlight the first point label in the new traverse if it isn't already highlighted.

2) Type 3 and press [Enter]. TPC will display a dialog telling you that this point already exists.

3) Press [Enter] to recall the existing point and its coordinates.

4) TPC will automatically add a second point to the traverse and move the cursor down to it.

5) Type 4 and press [Enter] twice.

Now that you have recalled points 3 and 4 into the traverse, you can enter the rest of the lot data, starting with the course from point 4 to 6.
Entering Record Data

6) Press [Enter] until the grid bearing to point 6 is highlighted.
7) Enter 130.4 for the grid bearing and 32.44 for the grid distance to point 6. Press [Enter] until TPC adds point 7 to the traverse.
8) Press the right arrow key on your keyboard until you are in the Radius cell for point 7.
9) Enter -430 for the Radius. The minus sign indicates a curve with a counterclockwise direction. Then enter 134.61 for the Arc Length. As soon as TPC has enough information, it computes the curve. Because curve data was entered instead of a bearing and distance, TPC assumes that the curve is to be a tangent curve as shown in the Drawing View window.
10) Continue pressing the [Enter] key until the cursor moves to the Grid Bearing cell for point 8.
11) Enter 190 for the grid bearing and 291.05 for the grid distance to point 8. Press [Enter] until TPC adds point 9 to the traverse.
12) Highlight point 9, type 3:1 and press [Enter]. This re-labels the closing point of the traverse to 3:1.
13) Press [Enter] until the Grid Bearing to point 3:1 is highlighted.
14) Enter 323.27 for the grid bearing and 166.2 for the grid distance to point 3:1.

► Checking the closure
1) From the Traverse View menu choose Tools | Closure View. Does your Closure View report 0.011 feet of linear error in the lot data?
2) Click on the X in the upper right corner of the Closure View to close it.
**Viewing the Survey**

Both of the traverses you just created were *tagged* when they were created in the Traverse dialog.

Only tagged (checked) traverses are displayed in the Drawing View. This allows you to view selected traverses while hiding others.

**Ending the Survey**

▶ **Saving your changes**

You have made several changes since the survey was saved.

1) From the desktop menu, choose File | Save Survey.

2) Choose OK when TPC tells you the file has been saved.

▶ **Exiting TPC**

1) To exit TPC, choose File | Exit. If TPC detects that changes have been made to the survey since the last time you saved your file, TPC will ask you if you want to save your file. Choose Yes.

**Reviewing - Traverses, Surveys and Files**

Now that you have created a *survey* with *traverses* and saved it to a *file*, reviewing what Surveys, Traverses, Points and Files are should help.

You have created one *survey* named **Plat Check**, which is saved in a *file* named **Record Data.trv**. The *survey* is composed of two *traverses* named **Lot 2** and **Lot 3**. The **Lot 2** and **Lot 3** traverses contain *points* 1 through 8 and *points* 1:1 and 3:1 which can be viewed in the Points Manager.

The *survey* name is Plat Check.

The *survey* file name is Record Data.TRV.

The *traverse* names are Lot 2 and Lot 3.

The *points* are 1 – 8, 1:1 and 3:1.
This chapter demonstrates:

- Adding a field data traverse to a survey
- Entering field data
- Entering sideshots
- Traversing ahead
- Traversing ahead using a different backsight
- Viewing the field data
- Viewing the survey
- Translating the field data to record data
- Rotating the field data to record data
- Calibrating instead of rotating and translating.
- Checking the results
- Ending the survey

Overview

In this chapter, you will enter field data (angles and distances) for the two lots you entered record data for in the chapter on Entering Record Data. You will rotate and translate the field data to the record data and check the results. This is typical of field data collected with a robotic total station.

GPS/GNSS

You could do this same field work with a GPS/GNSS unit and import the geodetic positions and calibrate them to your record data. See Calibrations (login required).

Getting started

1) From the Tasks Manager, choose Sample Surveys.
2) Double-click the LEARN FIELD DATA.TRV file.
3) Choose File | Save Survey As then enter the name Field Data and choose Save.
4) If prompted to replace the existing file, choose Yes.
Add a Traverse to the Survey

You will start by entering the field data.

1) At the Traverses Manager, double-click in blank space to bring up the New Traverse dialog box.

2) Type Field Data for the Name.

3) Using the mouse, left-click the down arrow on the right side of the Format list to display the list of pre-defined formats. Left-click Control 2D. We will modify this format to meet our needs.

4) From the Settings list choose Control Loops.

5) Choose Create temporary drawing.

6) Choose OK. You will see the following Traverse View.

7) Choose View | Format View and left-click the Format tab.

8) Change the Display Sequence to BSFYXD and the Edit Sequence to SFD.

9) Turn on Copy Descriptions to New Points and choose OK.

You will see the following Traverse View.

∪ To learn more about Traverse View formats

1) Choose Help | Search For Help On… and left-click the Index tab.

2) Scroll down to Traverse View Formats, highlight it and choose Display.
Entering the Field Data

We set two hubs on the property to act as control while we tie everything down. We will also take redundant shots to these points so that we can do a Least Squares adjustment later if we choose to. We will start this traverse by setting up on CP1 and back sighting CP2.

1) Type CP1 over the Point label 9 to rename it to CP1. There is nothing special about the label CP1, it is simply an annotation to indicate that this is a control point.

2) Press the [Enter] key on your keyboard until the **Description** field for point CP1 is selected, type **H&N** and press [Enter].

Traverse PC automatically puts CP2 in the **Point** label, BS in the **Type** and H&N in the **Description** (if this Format option is turned on). It also selects the **Slope Dist** field as the active field. This all occurred because of the Traverse View Format we set earlier.

3) Enter **227** in the **Slope Dist** field and **0** in the **Horiz Angle** field.

4) Press [Enter] from the **Description** field and TPC inserts **CP3** as the next point.

Notice that TPC automatically provided an assumed bearing for the backsight. We could have provided the assumed bearing but it really doesn’t matter as we will rotate and translate later to set the field data onto the record data.

5) Click on the **Point** label CP3 and type **100** to rename it to point 100.

6) Press the [Enter] key until the **Slope Dist** field is selected, type **217.2** and press [Enter].

7) Type **78.2604** in the **Horiz Angle** field and press [Enter].

8) Type **=1 FND 1” IP** in the **Description** field and press [Enter].

This is a shot to the southwest corner of Lot 2. This point was originally entered as point 1 in the record data so we annotated the description so that we can easily tell what this point is as well as use it as redundant data for a Least Squares adjustment if we choose to.
Entering Sideshots

As you enter data, TPC computes the position of the foresight, adds another point to the traverse, automatically numbers the point by adding 1 to the previous point label and highlights the new point. TPC automatically inserted point 101 into the traverse. Because this will be the first point in a series of sideshots, we need to tell TPC that it is a sideshot.

1) Choose Edit | Point Type | Sideshot and TPC inserts SS into the Type field.
2) Enter 162.5 in the Slope Dist field, 10.5544 in the Horiz Angle field and H2 in the Description.
3) Enter points 102 through 106 as sideshots with the following Slope Dist, Horiz Angle and Descriptions. (TPC automatically brings them in as sideshots and copies the Descriptions down so you only need to change the Description if it changes. You can simply press the [Enter] key to advance to the next point.)

<table>
<thead>
<tr>
<th>Point</th>
<th>Type</th>
<th>Bearing</th>
<th>Slope Dist</th>
<th>Horiz Angle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>102</td>
<td>SS</td>
<td>154</td>
<td>12°16'12&quot;</td>
<td>H2</td>
<td></td>
</tr>
<tr>
<td>103</td>
<td>SS</td>
<td>148.1</td>
<td>14°20'26&quot;</td>
<td>H2</td>
<td></td>
</tr>
<tr>
<td>104</td>
<td>SS</td>
<td>117.4</td>
<td>20°11'27&quot;</td>
<td>H2</td>
<td></td>
</tr>
<tr>
<td>105</td>
<td>SS</td>
<td>103.4</td>
<td>30°33'47&quot;</td>
<td>H2</td>
<td></td>
</tr>
<tr>
<td>106</td>
<td>SS</td>
<td>164</td>
<td>42°04'11&quot;</td>
<td>H2</td>
<td></td>
</tr>
</tbody>
</table>

Traversing Ahead

We will traverse ahead to our next point but TPC brought point 107 in as a sideshot so we need to change it to an occupied point.

4) Choose Edit | Point Type | Occupied, enter 284.9 in Slope Dist, 60.1712 in Horiz Angle and =2 FND 5/8" REBAR in Description.

This is a shot to point 2 at the southeast corner of Lot 2.
Entering Sideshots

Traverse PC assumes that you will backsight the previous occupied point with a zero horizontal angle. Because of this assumption, we don't bother to display the backsight in the Traverse View.

TPC automatically brings point 108 in as another occupied point but we are ready to shoot another series of sideshots.

1) Choose Edit | Point Type | SS=Side Shot, enter 201.7 in Slope Dist, 14.4351 in Horiz Angle and =105 H2 in Description.

This is a redundant shot to the southwest corner of the house on Lot 2 that we shot as point 105 previously.

2) Enter points 109 through 115 as sideshots with the following Slope Dist, Horiz Angle and Descriptions. (TPC automatically brings them in as sideshots and copies the Descriptions down so you only need to change the Description if it changes. You can simply press the [Enter] key to advance to the next point.)

<table>
<thead>
<tr>
<th>Point</th>
<th>Type</th>
<th>Slope Dist</th>
<th>Horiz Angle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>109</td>
<td>SS</td>
<td>138.9</td>
<td>21°40'18&quot;</td>
<td>=106 H2</td>
</tr>
<tr>
<td>110</td>
<td>SS</td>
<td>158.1</td>
<td>35°16'21&quot;</td>
<td>H2</td>
</tr>
<tr>
<td>111</td>
<td>SS</td>
<td>184.3</td>
<td>41°58'19&quot;</td>
<td>H2</td>
</tr>
<tr>
<td>112</td>
<td>SS</td>
<td>231.5</td>
<td>60°04'58&quot;</td>
<td>H3</td>
</tr>
<tr>
<td>113</td>
<td>SS</td>
<td>205</td>
<td>77°45'20&quot;</td>
<td>H3</td>
</tr>
<tr>
<td>114</td>
<td>SS</td>
<td>238.3</td>
<td>79°29'22&quot;</td>
<td>H3</td>
</tr>
<tr>
<td>115</td>
<td>SS</td>
<td>39.4</td>
<td>80°17'41&quot;</td>
<td>=CP2 H&amp;N</td>
</tr>
</tbody>
</table>
Traversing Ahead Using a Different Backsight

We will traverse ahead to our next point but TPC brought point 116 in as a sideshot so we need to change it to an occupied point.

1) Choose **Edit | Point Type | Occupied**, enter 329.7 in **Slope Dist**, 113.2656 in **Horiz Angle** and =8 FND 5/8" REBAR in **Description**.

This is a shot to point 8 at the northeast corner of Lot 3.

There are times when you need to use a different point than the previous occupied point as your backsight. Because Traverse PC assumes that we are using the previous occupied point, we need to tell it what our backsight will actually be.

2) After entering point 116 as an occupied point, TPC brings in point 117 as another occupied point. We actually want to backsight point CP2.

3) On point 117, choose **Type | BS=Backsight** to change it from an occupied point to a backsight.

4) Recall point CP2 by clicking on the point label 117 and entering CP2.

TPC will tell us that “CP2” already exists! and will ask if we want to Recall existing point and its coordinates.

5) Choose **OK**.

TPC recalls point CP2 with its coordinates and brings in point 117 as an occupied point. We need to change this point to a sideshot to continue entering our data.

Entering Sideshots

1) Choose **Edit | Point Type | SS=Side Shot**.

2) Enter the distances, angles and descriptions for the following sideshots:

<table>
<thead>
<tr>
<th>Point</th>
<th>Type</th>
<th>Bearing</th>
<th>Slope Dist</th>
<th>Horiz Angle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>117</td>
<td>SS</td>
<td>361.7</td>
<td>18°24'27&quot;</td>
<td>=106 H2</td>
<td></td>
</tr>
<tr>
<td>118</td>
<td>SS</td>
<td>335.2</td>
<td>23°20'02&quot;</td>
<td>=110 H2</td>
<td></td>
</tr>
<tr>
<td>119</td>
<td>SS</td>
<td>202.3</td>
<td>32°04'36&quot;</td>
<td>=113 H3</td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>SS</td>
<td>187.5</td>
<td>41°04'59&quot;</td>
<td>=114 H3</td>
<td></td>
</tr>
<tr>
<td>121</td>
<td>SS</td>
<td>198.7</td>
<td>42°20'26&quot;</td>
<td>H3</td>
<td></td>
</tr>
<tr>
<td>122</td>
<td>SS</td>
<td>188.8</td>
<td>53°49'17&quot;</td>
<td>H3</td>
<td></td>
</tr>
<tr>
<td>123</td>
<td>SS</td>
<td>224.4</td>
<td>55°11'28&quot;</td>
<td>H3</td>
<td></td>
</tr>
</tbody>
</table>
Entering Field Data

Traversing Ahead
We will traverse ahead to our next point but TPC brought point 124 in as a sideshot so we need to change it to an occupied point.

1) Choose **Edit | Point Type | Occupied**, enter 291.1 in **Slope Dist**, 62.23312 in **Horiz Angle** and =7 FND 1” IP in **Description**.

This is a shot to point 7 at the northwest corner of Lot 3.

Entering the Remaining Field Data
Enter the remaining field data as shown here using the techniques you have learned in the previous steps.
Reconciling the Field Data

To make sure your data exactly matches the examples on the following pages, you’ll open a file with the field data already entered.

1) From the Tasks Manager choose Sample Surveys.
2) Double-click the LEARN FIELD DATA ENTERED.TRV file.
3) Choose File | Save Survey As.
4) Enter the name Field Data and choose Save.
5) When prompted to replace the existing file, choose Yes.

At this point, you will want to translate and rotate the field data to get it on the same survey grid as the record data for the lots.
Entering Field Data

Translating the Field Data Traverse

We can use any point in our Field Data that is equivalent to one of the points in our record data to use as a base point for our translation and rotation. We will need to use the same point for both operations so that the second operation does not change the results of the first operation. The order that you do the translation and rotation in does not matter. We will start here by doing the translation first.

1) Select the Field Data traverse in the Traverses Manager or double-click it to open its Traverse View. Choose COGO | Translate from either of those views.

2) From the What list, choose Entire Traverse: Field Data.

3) Enter 100 in From and 1 in To as shown here.

4) Choose Compute.

Because point 100 was a shot to point 1 in the original record data, we can tell Traverse PC to move the Field Data traverse based on the coordinates of points 100 and 1. The middle column of the Translate dialog box shows us how much the traverse will move in coordinates and Bearing and Distance.

We must tell Traverse PC that we only want to translate the Selected Traverse because translating the Entire Survey would result in no relative change between the Field Data traverse and our record data traverses.

☞ To learn more about using COGO tools in Traverse PC

1) Choose Help | Search For Help On… and left-click the Index tab.
2) Scroll down to COGO, highlight it and choose Display.
3) Choose the topic you are interested in and choose Display.
Rotating the Field Data Traverse

Because we used point 100 to match up with point 1, we will need to use point 100 as our rotate point or we will have to translate the Field Data traverse again.

1) Now choose COGO | Rotate.
2) From the What list, choose Entire Traverse: Field Data.
3) Enter 100 in Rotate Point and tab to the From field.
4) Enter 100..107 in From and tab to To.
5) Enter 1..2 in To.
6) Choose Compute.

Because point 100 was a shot to point 1 and point 107 was a shot to point 2 in the original record data, we can tell Traverse PC to rotate from the bearing between 100 and 107 (100..107) to the bearing from 1 to 2 (1..2). The Degrees field of the Rotate dialog box shows us how much the traverse will rotate. You have just used Equations to recall the bearings between points in the file.

As in most COGO commands, you tell Traverse PC that you only want to rotate specific data, like this traverse, because rotating the entire survey would result in no relative change between the Field Data traverse and our record data traverses.

To learn more about using equations
1) Choose Help | Search For Help On... and left-click the Index tab.
2) Scroll down to Equations, highlight it and choose Display.
3) Select Entering Equations and choose Display.
Calibrating Instead of Rotating and Translating

In the Learning Center’s Calibrations section, look for a sub-section called Calibrate Total Station. Here, you will learn how to use TPC’s calibration tools to rotate, translate and scale your field data to your record data, or visa versa.

Calibrations allow you to scale data along with rotating and translating. They can even calibrate the elevations, called a 3D calibration instead of a 2D calibration, or simply apply a vertical shift to a 2D calibration (very common option).

► Local Grid

Calibrations allow you to enter record data on a local grid, say 5000/5000 and still relate your field data to it. The field data can have whatever uncalibrated coordinate positions it starts with, but it will end up on the same grid as your record data.

► Calibrating GPS/GNSS Data

If you used GPS/GNSS for your field data, calibrating that data to your record positions takes care of all the geodetic to coordinate transformation, using the CRS of the survey, plus it then adjusts the CRS coordinates to match your local grid.

► Calibrating Total Station Data

When you calibrate total station data, you don’t have to worry about whether you translate before you rotate or rotate before you translate, how you scale the measured data to the record data and so on. The calibration takes care of all that for you, providing you with a Least Squares best fit.
Checking the Results

Now that we have translated and rotated our field data to the record data, we can check to see how the field data matches up with the record data.

► Using Drawing View
You can go to the Drawing View and zoom in on different areas of the drawing to get an idea of how close the data lines up but we won’t know how close it is without checking some of the points.

► Using COGO
You can also check your results using the COGO tools.

1) Choose COGO | Random Inverse.
2) Enter 100 in From and 1 in To.
Traverse PC tells us that the coordinates of these two points are identical and there is no distance between them. That is what we expect because point 100 was the point we chose to match up with point 1.

3) Enter 107 in From and 2 in To.
The Random Inverse dialog box indicates there is 0.020’ between these two points.

4) Enter 139 in From and 1 in To.
Point 139 was the final point in closing our loop to point 1. We find that there is 0.034’ difference between these two points.

- To learn about traverse closure and adjusting traverses
1) Refer to the chapter on Closure and Adjustments in this Learning Guide.
Creating Traverses

This chapter demonstrates:

- Creating traverses
- Creating traverses in the Traverses Manager
- Creating traverses from the Points Manager
- Creating traverses from the Traverse View
- Adding and rearranging traverse points
- Selecting existing points from a drawing
- Adding points to a traverse
- Inserting Gaps into a traverse
- Using the Add Points to Traverse command to add points
- Creating traverses from COGO
- Creating traverse from point codes
Overview

Traverses are the heart and soul of TPC. You use them to enter data, create reports, compute areas, draw features on a map, plat subdivisions, compute alignments and the list goes on. As you learn TPC you begin to think about lots of ways to use traverses.

So if traverses are so important to TPC, how do you create them?

The answer is – lots of ways. That’s the purpose of this chapter – to introduce you to some common ways of creating traverses and populating them with survey points. We’ll be listing many commands that can be used to create traverses but we’ll only walk you through a few of them step-by-step.

Survey Points and Traverses

A survey can have any number of unique survey points (each point can have just one set of coordinates and no two point labels can be the same) and any number of traverses. A traverse can include any number of survey points and a survey point can be included in any number of traverses.

In this chapter, we will create new traverses, create new survey points and add them to traverses and add existing survey points to traverses.

Plat Checking Guide

1) From the Task Manager’s Getting Started panel, choose Plat Checking.

We will introduce you to creating traverses from a drawing in this chapter, but the Plat Checking guide goes into greater detail, specifically about the synchronization between the Drawing View and Traverse View.

Getting started

1) From the Tasks Manager choose Sample Surveys.
2) Double-click the LEARN CREATE TRAVERSES.TRV file.
3) Choose File | Save Survey As then enter the name CREATE TRAVERSES and choose Save.
4) If prompted to replace the existing file, choose Yes.
Creating Traverses

Creating Traverses
As a general rule, you create a traverse then add the survey points to it. Some of the commands we will look at create the traverse and add the survey points in one step.

▸ Ways to create traverses
Let’s list some common ways you will create traverses in TPC. We’ll look at some of these in more detail later in this chapter.

- Inserting or appending a new traverse in the Traverses Manager.
- Copying or duplicating an existing traverse in the Traverses Manager.
- Importing a data collector file into a survey.
- Selecting points in the Points Manager and creating a new traverse to hold them.
- Selecting points in a Traverse View and creating a new traverse to hold them.
- Picking side shots in Drawing View to creating a feature line for the drawing.
- Sorting points into traverses based on their point codes.
- Creating traverses to hold an offset from a centerline traverse.
- Creating a traverse to display a transect of a contour surface.
- Lots more…

▸ Naming traverses
Each time you create a new traverse, TPC expects you to name it. The name you choose is important. It will help you organize the data in your survey. Choose short, descriptive names where possible, such as Lot 1 and Lot 2 for lot traverses or Control 12/14/07 for field data.

▸ Inserting traverses
New traverses are always inserted into the Traverses Manager. As a general rule, you will want to group the traverses in the Traverses Manager to help your organize your data. You might group the traverses with record data separately from the traverses that contain your field data.

The tools that create traverses allow you to Insert the new traverse before or after the selected (highlighted) traverse in the Traverses Manager or Append the new traverse to end of the list.

▸ Rearranging traverses
To rearrange traverses in the Traverses Manager, drag-n-drop the traverse name. The traverse order is significant because the first traverse to draw a survey point or line controls how that point or line looks in the drawing. That point or line may be included in other traverses, but they won’t be able to change the way it looks in the drawing.
Creating Traverses in the Traverses Manager

You create a new traverse in the Traverses Manager as follows:

1) Right-click any traverse or choose **Tools**. Then choose **Insert New Traverse | Above Selected Traverse** to insert a new traverse above the selected traverse.

2) Right-click any traverse or choose **Tools**. Then choose **Insert New Traverse | Below Selected Traverse** to insert a new traverse below the selected traverse.

3) Right-click any traverse or choose **Tools**. Then choose **Insert New Traverse | Append to End** to add a new traverse to the end of the traverse list.

4) Double-click any blank line in the Traverses Manager to append a new traverse to the end of the list. This is the same as the **Append Traverse to End** command.

You create a new traverse from an existing traverse as follows:

5) Choose **Tools | Copy Traverse (shares points)** to insert a copy of the selected traverse beneath the selected traverse. TPC names the new traverse **Copy-** followed by the original traverse name. The new traverse uses the same survey points as the original traverse but does not copy any raw data included in the original traverse.

6) Choose **Tools | Duplicate Traverse (creates unique points)** to insert a duplicate of the selected traverse beneath the selected traverse. TPC names the new traverse **Dup-** followed by the original traverse name. A duplicate traverse contains unique survey points which are duplicates of the originals with unique point labels.

▶ Let’s append a new field data traverse using option 3 above

1) Double-click any blank line in the Traverses Manager. TPC displays the **Traverse** dialog.

2) Enter **FIELD DATA 8/3/2009** for the **Name** then chose the other options shown here and choose **OK**.

TPC appends this new traverse to the Traverses Manager and displays the new traverse’s **Traverse View**.
Creating Traverses

Creating Traverses from the Points Manager

You can add selected points from the Points Manager to an existing traverse or create a new traverse to hold the points. Let’s place the stepping stones we tied into a traverse.

1) Left-click the ==== Field Data ==== traverse in the Traverses Manager. We will be inserting the new stepping stone traverse above this traverse and need to mark the insert position in the Traverses Manager.
2) Left-click the Points Manager tab or choose Manage | Points from the desktop menu.
3) Scroll down to point 53 and select points 53 through 60 (left-click point 53, hold down the shift key then left-click point 60).
4) Choose Tools | Add Selected Points to Traverse. TPC displays the Add Points to Traverse dialog.
5) Enter Stepping Stones for the Name.
6) For Insert choose Before: ==== Field Data ====.
7) From the Format list, choose Coordinates.
8) From the Settings list, choose Symbols Only.

The Symbols Only selection gets us close to the way we want to plot these 15”x15” cement stepping stones. It acts like a template which draws a point symbol without any text or connecting lines. We just need to modify the symbol and color.

9) Left-click the ⛧ button next to Symbols Only in Settings to display the Traverse Settings – Stepping Stones dialog and left-click the Control Points tab.
10) Change the Color to Black, the Symbol to Circle, the symbol size to 0.1 inches and choose OK.

The Add Points to Traverse dialog now displays Custom... for the Settings since it no longer matches the Symbols Only settings.

11) Make sure Share current drawing and Set Tag are turned on in the Drawing Options section and choose OK.

TPC inserts the Stepping Stones traverse into the Traverses Manager and redraws the stepping stone points in the drawing.
Creating Traverses from the Traverse View

You can think of creating a new traverse from the Traverse View as exporting that portion of the traverse to another traverse. The new traverse has the option of including the original raw data and traverse point types.

1) Double-click the FIELD DATA FROM CS2 traverse to open the Traverse View.
2) You might also want to choose View | Single Row per Point.
3) From the Traverse View select points 1 through 5 (left-click point 1, hold down the shift key on the keyboard then left-click point 5).
4) Choose Tools | Add Selected Points to Traverse.
5) In the Add points to New traverse dialog, enter Building for the Name for the new traverse and select the Format and Settings you want.
6) Turn on Convert to control points. This converts the side shots in the original traverse to control points in the target traverse so that they can be used to draw the building outline.
7) Choose OK to complete the command.

TPC adds the Building traverse to the Traverses Manager, copies the selected points into it based on their sequence in the original traverse and draws the building in Drawing View.

Unfortunately, the original point sequence doesn’t draw a very good building. Let’s fix that.
Creating Traverses

**Adding and Rearranging Traverse Points**

The problem we just ran into is that the sequence in which we shot the points in the field does not automatically map out the building. The field crew could have collected the building points in their proper mapping sequence in which case the Building traverse would draw the building as is.

Thanks to some very handy tools in TPC, correcting the building using the existing survey points is very easy to do.

1) Left-click Drawing View to activate it then right-click any of the building lines and choose **Traverse Tools | Insert / Delete Survey Points**. This drawing command inserts random survey points into an existing traverse based on their proximity to the traverse.

2) Left-click the point label we’ve circled here to add it to the traverse, then right-click any blank spot to end this command. The building is starting to look better.

3) Now right-click one of the building lines again and choose **Edit Traverse**. TPC displays the **Building** Traverse View.

4) Highlight point label 3, type 4 and press Enter twice.

5) Highlight point label 4 on the next line down, type 3 and press Enter twice.

6) Add point 1 to the end of the traverse.

7) **Just for the fun of it**

8) Right-click the Building traverse in the Traverses Manager and choose **Traverse Settings**.

9) In the dialog, left-click the **Fill** tab and select **Solid** for the **Fill** then choose **OK**.
Selecting Existing Points from a Drawing

The Plat Checking guide explains methods you can use to create traverses from drawings.

We'll look at just one of these methods now as we create the same Building traverse you just created in the last topic.

1) In the Traverses Manager, right-click the Building traverse and choose Delete Selected Items. You just deleted the traverse but the survey points that it included are still part of the survey.

2) Left-click Drawing View to active it and choose View | Zoom, Zoom Window and follow the command prompts to window the area that includes the building corners like we show here.

3) Right-click any point label in the drawing and choose Drawing Order | Move Layer to the Front. This will help keep the point labels on top as we select points.

4) Choose View | Zoom, Zoom Points to reduce the size of the point labels and symbols. This will make selecting points from the drawing easier.

5) Choose Tools | Add Points to Traverse.

6) Enter Building for the Name and match the dialog settings shown here.

7) Left-click the 🗝 button next to Traverse Drawing Settings and in the dialog, select Solid for the Fill then choose OK to return to this dialog. TPC displays Custom… for the Traverse Drawing Settings since they no longer match one of the settings in the list.

8) Choose OK.

The Method we've selected here allows you to select existing survey points by left-clicking either a point symbol or point label. This is exactly what we want for our example.
Creating Traverses

9) Left-click the point symbol or point label for point 1. The point label is **1:BLDG SW CORNER**. You can left-click any part of this label or the point symbols itself to select point 1. When you select point 1, TPC adds it to the Traverse View.

10) Left-click points 90, 2, 4, 3, 5 and 1. We click point 1 again to close the traverse. Notice how TPC draws and fills the traverse as you select points.

11) Press the Enter key to finish the command.

TPC closes the Traverse View it opened to show the points as you selected them and refreshes the Traverses Manager to show the **Building** traverse.

Hint: If you had turned on the **Repeat** option in the Add Points to Traverse dialog, TPC would redisplay that dialog so you could create the next traverse.
Adding Points To an Existing Traverse

In this topic we will look at how to add points to an existing traverse. The existing traverse can contain points already or it can be an empty traverse you just created.

**Insert Existing Points**

1) Select the Stepping Stones traverse in the Traverses Manager and choose Tools | Insert New Traverse | Above Selected Traverse.
2) Match the dialog shown here then choose OK. TPC displays the Traverse View for the TFC traverse.
3) Choose Edit | Insert Existing Points to display the Insert Existing Points dialog.
4) Select the Matching Points option then OK.
5) In the Matching Points dialog, enter TFC1, select Point Description and choose Find Next. TPC displays the number of points it found and leaves the Find dialog open so you can insert other matching points.
6) Highlight point 6 in the Traverse View and repeat step 5 for TFC2.
7) Highlight point 94 in the Traverse View and repeat step 5 for TFC3.

In the next topic, we’ll remove the unwanted lines connecting TFC1, TFC2 and TFC3.
Inserting Gaps in a Traverse

TPC uses a Gap point type to remove unwanted lines from a traverse.

1) Position the cursor over the two circled line, right-click and choose Gap.

TPC removes those lines by inserting a Gap points at the appropriate places in the TFC traverse as shown here.
Using the Add Points to Traverse Command to Add Points

We used this command in previous topics to create new traverses we could add points to. It can also be used however, to add points to an existing traverse.

► From the Traverse View and Points Manager

1) In either the Points Manager or Traverse View, select the points you want to add to a traverse and choose Tools | Add Selected Points to Traverse.

2) In the Add points To Traverse dialog expand the list of traverses in the Name field and select the target traverse from the list.

3) Select the other options you want then choose OK.

The selected points will be appended to the existing traverse you selected in the dialog.

► From Drawing View – Option 1

1) Choose Tools | Add Points to Traverse.

2) In the Append points To Traverse dialog expand the list of traverses in the Name field and select the target traverse from the list.

3) Choose the Method and other options you want then choose OK.

Select the drawing points according to the Method you select. The points will be appended to the existing traverse you selected.

► From Drawing View – Option 2

This option is a variation of Option 1 that allows you to select the traverse you want to add points to by right-clicking any object created by that traverse in the drawing.

1) Right-click a traverse object for the traverse you want to add points to and choose Traverse Tools | Add Points.

TPC displays the Add points To Traverse dialog and lists the traverse in the Name field. If you expand the Name list it will be empty indicating that the traverse has already been selected for you.

2) Choose the Method and other options you want then choose OK.

Select the drawing points according to the Method you select. The points will be appended to the existing traverse.
Creating Traverses

Creating Traverses from COGO

Some COGO routines create traverses to hold their computations. When you station an alignment for instance, TPC creates a copy of the original alignment traverse and inserts the stations into it.

The following are some COGO routines that create traverses.

**COGO | Right-Of-Way Offsets** – you can include the offsets points that are created in the original traverse or you can create a new traverse to hold them. This is the preferred method if you are using this routine to create lot setbacks or highway right-of-way lines.

**COGO | Stations** – TPC creates a copy of the original alignment and inserts the computed stations into the copy. The copy does not contain any raw data (bearings or distances) making the copy cleaner to work with.

**COGO | Offset to Alignment** – This routine determines the stationing along an alignment where a selected point is perpendicular to that alignment. Points can then be referenced to that alignment by their station and offset. TPC creates a copy of the alignment and inserts both the station and the offset of each computed point.

**COGO | Predetermined Area** – This routine creates a new traverse for the area you specify and another optional traverse for the remainder. If you cut a one acre lot out of a four acre parcel, TPC will create the one acre traverse and a three acre traverse for the remainder. The three acre traverse can then be used to create additional lots.
Creating Traverses from Point Codes

Point codes are number codes or abbreviations used to identify points in the survey. They are typically short to facilitate coding in the field and may or may not be descriptive of the points (i.e. 121=Oak Tree, 245=3 port fire hydrant, TOE=toe of slope, CLF=Chain Link Fence, etc.).

TPC uses the codes to sort points into traverses. All the points with the CLF code end up in the Chain Link Fence traverse, all the Oak Trees are in their own traverse, etc. The individual traverses convert the field data into a site map.

The traverses you create from point codes can also be updated to include new points you add to the survey. The Tools | Update Point Code Traverses command is available in both the Point Code Manager and the desktop menu.