# **Georeferencing a PC Traverse Drawing**

### In this Chapter you will learn

- 7.15
- How to add coordinates to a legal description in PC Traverse so that any drawing you make automatically appear in the correct location and scale in ArcGIS

## 1. Georeferencing your PC Traverse drawing

There are a number of software packages that allows users to enter legal descriptions into the computer. For example, ArcGIS has COGO tools (at the ArcEditor and ArcInfo functionality levels) or users can purchase stand-alone packages like PC Traverse or Greenbriers' Net Deed Plotter. This topic explains how you can add coordinates to the Net Deed Plotter Deed Call Editor so that after you export a drawing to a .dxf format it automatically appears in the correct scale and location on your map when you bring it into ArcMap.

In this tutorial we will use the following legal description:

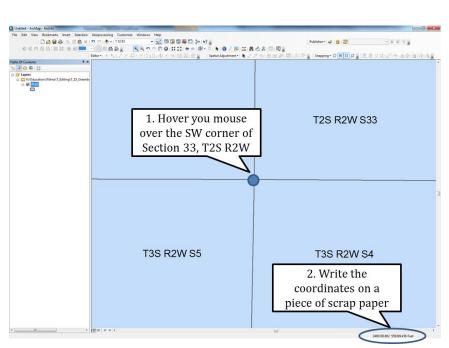
Commencing at the SW corner of Section 33, T2S R2W. Thence N 0 ° E 500 feet, then N 90 ° E 1,000 feet. Thence S 0 ° W 500 feet; thence S 90 ° W 1,000 feet to SW corner of the section.

#### Exercise 1: Finding and then adding coordinates to net deed plotter

- 1. Open ArcMap and add the PLSS shapefile.
- 2. Right-click on the word "Layers" to open the properties for this data frame. Go to the "General" tab as shown on the right and make sure that the Display units are set to feet.
- 3. Click on the "Coordinate System" tab and make sure your coordinate system is set to Idaho State Plane West, NAD 83 with units expressed in US feet.
- 4. Right-click on the PLSS layer and choose "Label". You should now be able to see the township, range and section numbers.
- 5. To find the coordinates of the point of beginning zoom closely (for example to a scale of 1:10) to the SW corner of Section 33, T2S R2W.

	nnotation Groups	Extent Indicators	Frame	Size a	and Position
General Da	ta Frame	Coordinate System	Illumina	ation Grids	
Name: Layer	s				
Description:					
			*		
			-		
Credits:					
Units Map: Feet					
			×		
Display Feet					
-		Prove Balance Add	•		
additional o	nize > ArcMap O options for displa	ptions > Data View tab ying coordinates in the	for status		
Tip: See Custor additional o bar	nize > ArcMap O options for display	ptions > Data View tab ying coordinates in the	for status		
additional o bar	nize > ArcMap Options for displat	ptions > Data View tab ying coordinates in the	for status		
additional o bar Reference <u>S</u> cale:	<none></none>	ptions > Data View tab ying coordinates in the	for status		
additional o bar Reference <u>S</u> cale: <u>R</u> otation:	<none></none>	ying coordinates in the	for status		
additional o bar Reference <u>S</u> cale: <u>R</u> otation:	<none></none>	ptions > Data View tab ying coordinates in the d Label Engine	for status		
additional o bar Reference <u>S</u> cale:	<none> 0 ESRI Standar</none>	ying coordinates in the	for status		
additional o bar Reference <u>S</u> cale: Rotation: Rotation:	<none> 0 ESRI Standar</none>	ying coordinates in the	for status		
additional o bar Reference <u>S</u> cale: Rotation: Rotation:	<none> 0 ESRI Standar</none>	ying coordinates in the	for status		

- 6. Hover you mouse over the Southwest corner of section 33 and write down the coordinates on a piece of scrap paper as shown on the right.
- In our example the coordinates are 2400336.802 East and 559309.456 North. Since we set our map units to feet, we know that those coordinates are also given to us in feet. Minimize ArcMap (but leave it running).



- 8. Open PCTraverse and click on New Survey in the dialog box shown on the right
- 9. Click on the "Coordinate Referencing System" tab and set the coordinate system to NAD83, US Feet, Idaho West as shown below.

ks	
Open a Survey	-
2012_09_18_test.TRV	
My Surveys	
Shared Surveys	
Sample Surveys	
New Survey	

Survey Information	
Survey Surveyor Coordinate Reference System User Definitions	
Name NAD83 (Conus)	
Zone Idaho West 👻	
Horizontal Datum NAD83 (Conus) - Ellipse	
Combined Factor 0.999933333 Theta 0'00'00"	
Feet <=> Meters   International Foot  US Survey Foot	
Projection: Transverse Mercator Ellipse: Geodetic Reference System 1980 Central Mendian: 115'45'00.00''W Reference Lattude: 41'40'00.00''N Scale Factor: 0.999933333 False Easting: 800000 Meters False Northing: 0 Meters False Northing: 0 Meters	Survey Information
10. Click on the Survey tab and give your survey a name as shown on the right.	Survey       Surveyor       Coordinate       Reference       System       User Definitions         Filename       C:\Users\wrobertson\Documents\Surveys\T2SR2W         Creation       Date       9-18-2012       Browse         Survey       Location

11. Click OK.

12. Click on "Traverses" along the top of your screen and then click Tool > Insert New Traverse as shown on the right. Choose Below Selected Traverse.

	То	ols 🖣 COGO 🔹 🚯 🕰 👬 📰 🐺	. 🗰   💫   🗄
	66	<u>F</u> ind	F3
		Replace	Ctrl+F3
	<b>X</b>	Delete Selected Items	Delete
		Remove Selected Items From Survey	Shift+Delete
Above Selected Traverse	Insert	Insert New Traverse	۱.
Below Selected Traverse Shift+	Insert 📕	Copy Traverse (shares points)	
Append to End Ctrl+	Insert 🛱	Duplicate Traverse (creates unique poir	nts)

- 13. Set up the traverse as shown on the right. Click OK.
- 14. Enter the starting coordinates you wrote down in step 6 above. Those coordinates are entered in the figure shown below.

📑 Tra	verse Vi	ew - Parc	el 1			
Edit	View	Tools	cogo 🕴	] 🖏 🗖 🕂	🚜 🗄 🛗 🕄	🗰 🖏 🤣 🔪 🚆
P	Ту	Bear	Horiz	Northing	Easting	Description
2				559309.456	2400336.802	Start

New Trave	rse		? ×
	Enter a new name.		
Name	Parcel 1	raverse (i.e. Lot 1, Lot 2, etc)	
Desc			
Format	Deed	•	
Settings	Property Lines	•	
Drawing	g Options		ОК
	e current drawing	Delineate traverse	
Crea	te temporary drawing	🔽 Set Tag	Cancel

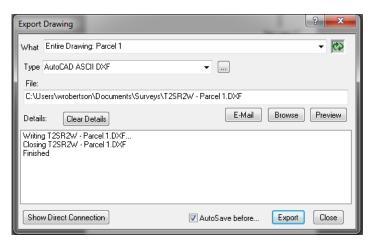
#### 15. Click enter.

- 16. Add all the calls from the legal description found on the first page of this exercise. Note that the first bearing, for N 0° E, is typed in as 100.0000. The first 1 denotes the NE quadrant, the remaining "00.0000" corresponds to 0 degrees, 0 minutes and 0 seconds. The last call, which is for S 90° W is entered as 390.0000. The "3" denotes the SW quadrant, the 90 is for the 90 degrees, and the last "0000" for zero minutes and zero seconds. The result is shown in the figure on the right.
- in the figure on the right. 17. Click on the "Draw Just This Traverse" button.

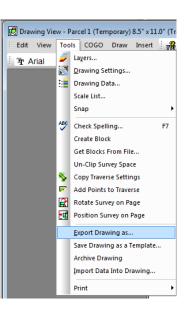
Edit	View	Tools COGO	1 🗠 🦆 🕻	7 🕂 義 🗈	i 🛍 🗰 🏹 🭕	?_ >_ +% 🖶 🍾 🚽
Point	Туре	Bearing	Horiz Dist	Northing	Easting	Description
2				559309.456	2400336.802	Start
3		N0°00'00"E	500.00	559809.456	2400336.802	
4		S90°00'00"E	1000.00	559809 456	2401336 802	
5		S0°00'00"E	500.00		2401336.802	
6		S90°00'00''W	1000.00		2400336.802	
5				559509.456	2400336.602	
(						

ſ	📑 Trav	erse Vie	w - Parc	el 1	
	Edit	View	Tools	COGO	🖸 🖳 🗗 🕂 🏨 🎚 🏙 🗰 🏹 👼
	Point	Туре	E	Bearing	Hor 🕝 Draw Just This Traverse
	2				Draw just this traverse in Drawing View

- **18**. In the Drawing View click on Tools > Export Drawing as... as shown on the right.
- 19. Save your parcel as Type AutoCAD ASCII DXF and accept the default name. Click Export as shown below.



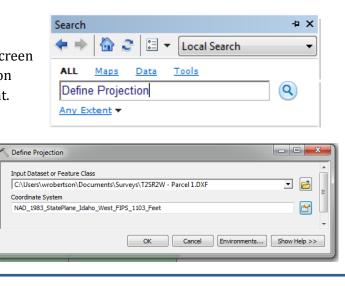
- 20. Go back to ArcMap and click the "Add Data" button. Navigate to the DXF file you created in the previous step and add the polyline layer from the t2sr2w.dfx group to your map.
- 21. Even though you get an "unknown spatial reference" warning, you know your drawing is in Idaho State Plane west because that is how you set it up in step 9. Since your ArcMap is also in this projection, the drawing will show up in the right spot.



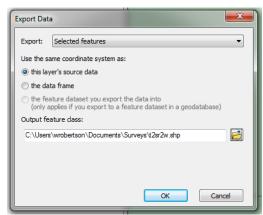
Add Data	
Look in:	12SR2W - Parcel 1.DXF 🔹 🗲 🏠 🗟   🏥 🕈 l 🖆 🗊 🚳
Name: Show of type:	Polyline Add Datasets, Layers and Results Cancel

Note that if your map is in a different projection, for example in IDTM83, then you need to assign a projection to the dxf files. Do this as follows:

- a) Remove the dxf layer from your map
- b) Go to "Windows" along the top of your screen and click on "Search". Then do a search on "Define projection" as shown on the right.
- c) In the search results click on "Define Projection (Data Management)" to open the tool
- d) Populate the tool as shown on the right.
- e) Click OK. Then click on the Add Data button and add the .dxf to your map.



- 22. Right-click on the T2SR2W Parcel 1.DXF Polyline layer and click on "Open Attribute Layer".
- 23. Select all the records from the TPCLines\_ Layer as shown on the right.
- 24. Right-click on the T2SR2W layer again and choose Data > Export data. Export the selected features to a new shapefile as shown below.



25. When prompted add the new shapefile to your map.

	2SR2W_TEST - Parcel 2.DXF Polyline										
	FID	Shape	Entity	Layer	Color	Linetype	Elevation	LineWt	RefName		
	1	Polyline	LWPolyline	0_	7	Continuous	0	25			
	2	Polyline	LWPolyline	0_	7	Continuous	0	25			
	3	Polyline	Insert	0_	7	Continuous	0	25	North_Arrow_1		
Ì	4	Polyline	LWPolyline	0_	7	Continuous	0	25			
Γ	5	Polyline	Line	0_	7	Continuous	0	25			
Г	6	Polyline	Line	0_	7	Continuous	0	25			
Ì	7	Polyline	Line	0_	7	Continuous	0	25			
Γ	8	Polyline	Line	0_	7	Continuous	0	25			
Γ	9	Polyline	Solid	0_	7	Continuous	0	25			
Γ	10	Polyline	Solid	0_	7	Continuous	0	25			
Γ	11	Polyline	Solid	0_	7	Continuous	0	25			
Г	12	Polyline	Solid	0_	7	Continuous	0	25			
Г	13	Polyline	LWPolyline	0_	7	Continuous	0	25			
	14	Polyline	Line	TPCLines_	254	DASHED	0	0			
Γ	15	Polyline	Line	TPCLines_	254	DASHED	0	0			
Γ	16	Polyline	Line	TPCLines_	254	DASHED	0	0			
Г	17	Polyline	Line	TPCLines_	254	DASHED	0	0			