Thank you to the Richmond AutoCAD Manifest (RAM)

April 26, 2012

I'd like to thank Art Thomas and the Richmond Virginia AutoCAD User Group for inviting Jeremy and me to demonstrate Carlson Software and data collection last night. Our hour-and-a-half long presentation covered the basic tools and Survey, Civil and GIS specific features of the Carlson products.

The RAM User Group has been active for 20+ years and has a lot to offer CAD users in the central Virginia area. Their meetings are usually on the 3rd Wednesday of each month and start after work at 5:30. If you're based in the Richmond area, I'd highly recommend that you join up with them.

Did you know… About Coordinate Display Toggles?

April 26, 2012

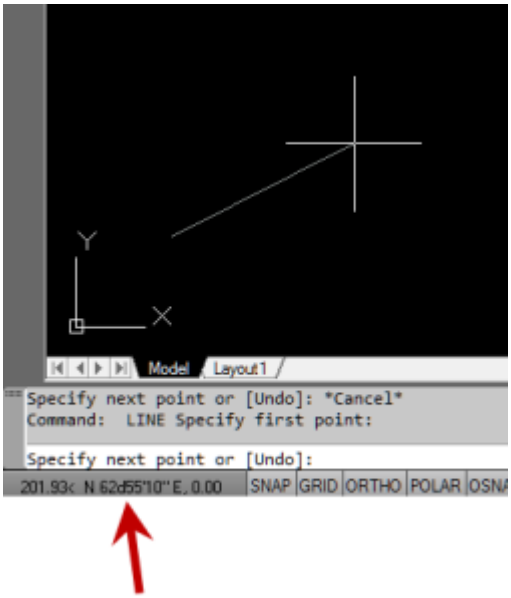
Did you know that, when you're in AutoCAD or IntelliCAD, you have a couple of different options when it comes to displaying the coordinate position of your crosshairs?

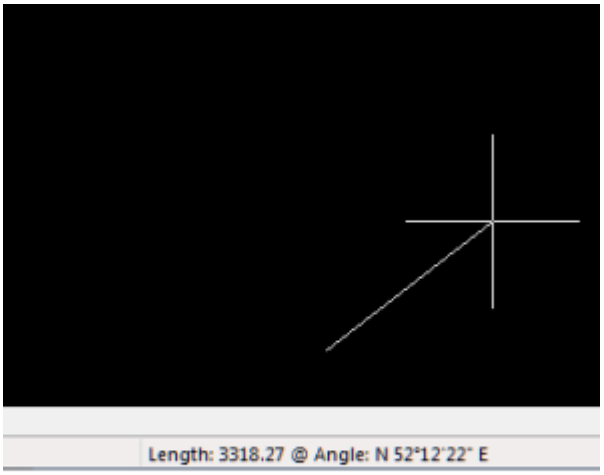
For instance, when you're NOT in a command, you have two options for displaying the coordinate position of your crosshairs as it moves across your screen: On or Off. If the coordinate display is toggled ON, then the X, Y and Z position (rectangular coordinates) of your crosshairs are displayed and if it's OFF, then the X, Y and Z display is frozen and doesn't update as your mouse moves.

However, if you are currently in a command that requires two points be picked to specify an angle and distance (commands such as Line or Move, etc), you have a 3rd coordinate display available to you: polar coordinates. Unlike rectangular coordinates that display X, Y and Z position, polar coordinates report a distance and angle from the original

point. For instance, when you start the Line command you can toggle the coordinate display so that rectangular coordinates are ON or OFF. But, after picking the first point of the line, you can toggle the coordinate display so that rectangular coordinates are ON, rectangular coordinates are OFF or that polar coordinates are ON.

The image below on the left shows the polar coordinate display in AutoCAD and the IntelliCAD version is shown below on the right:





To toggle the coordinate display in newer versions of AutoCAD (since 2009?) double-click on the coordinate display. In older versions of AutoCAD and in IntelliCAD, the F6 button

toggles the display.

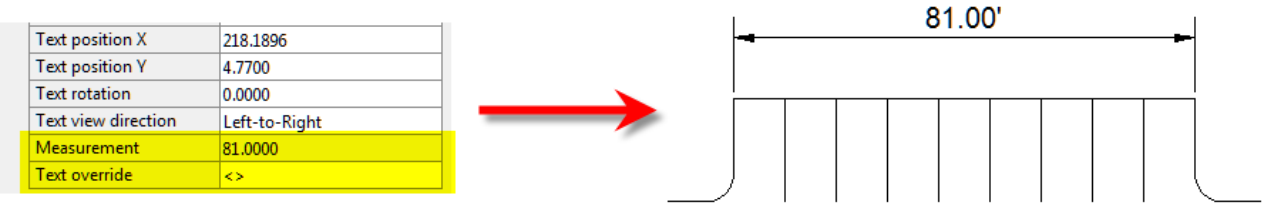
Did you know… How easy it is to spruce up your dimensions?

April 26, 2012

Anyone who has worked with AutoCAD for any length of time can usually create a standard dimension object. However, if you pay close attention to two items in the Object Properties dialog box, you can get very creative with the way simple dimensions are displayed.

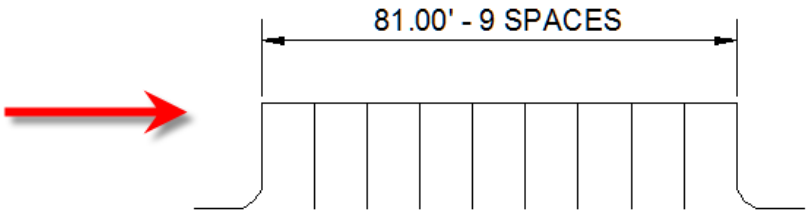
For instance, in the image just below, you can see that there

are two Object Properties items highlighted in yellow. One is the “Measurement” and the other is the “Text override”. The Measurement is the measured distance between the dimension definition points (DEFPOINTS) and is read-only. You can also see that the current value for Text override is “< >”. Whenever the less-than and greater-than signs are shown as the Text override value, the Measurement will be substituted for the symbols when displayed in the drawing.



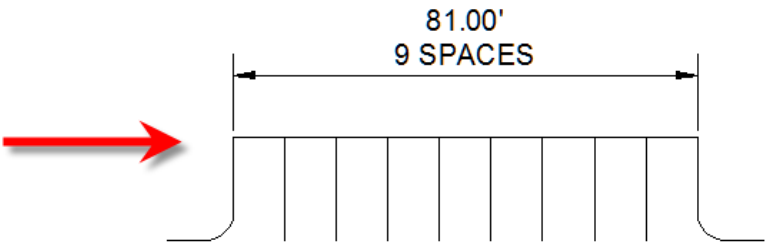
To add just a little more detail to the dimension, you can add descriptive text before or after the “< >” in Text override as shown in the next example below. As long as you keep the “< >”, the correct measured distance will always be displayed as part of the dimension text:

Text position X	69.3555
Text position Y	-15.5952
Text rotation	0.0000
Text view direction	Left-to-Right
Measurement	81.0000
Text override	<> - 9 SPACES

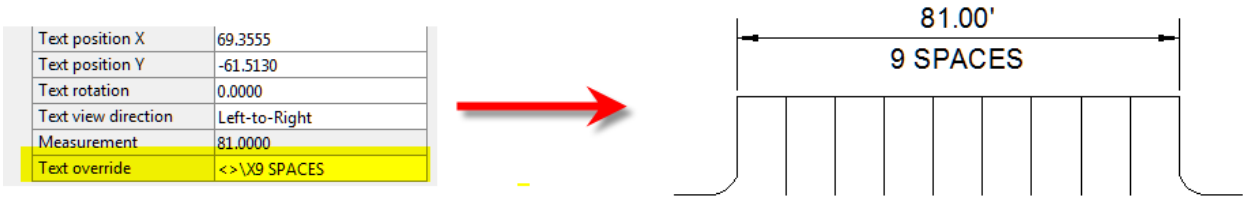


And, making it fancier… In the example below, I have added a "P" between < > and "9 SPACES". This is like pressing Enter to go to a second line and has the effect of stacking two lines of text above the dimension line:

Text position X	69.3555
Text position Y	22.7861
Text rotation	0.0000
Text view direction	Left-to-Right
Measurement	81.0000
Text override	<>\P9 SPACES



And, finally, one more option. Rather than entering "P", if you enter "X" as part of your Text override, you will stack the text partially above and partially below the dimension line.



The “P” and “X” modifiers can also be used in combination to create 3 or more lines of text and allowing you to control how many lines appear above and how many appear below the dimension line.

Tips & Tricks for Setting Points in Carlson – Webinar

April 26, 2012
Yeah, you know all of them already… Unless you don’t!

Carlson has a lot of great tools that are available for setting points but some of them are a little hidden. I will be covering some features in Carlson Survey and Carlson Civil that will, hopefully, help you increase your productivity.

Register Now! Wednesday, February 29th – Tips & Tricks for Setting Points in Carlson

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Did you know… About Temporary Overrides?

April 26, 2012
There are others, but my two favorites are:

- Holding **Shift** while in a Draw or Modify command allows you to override your current ORTHO setting.

So, if you're drawing a line and ORTHO is Off, holding **Shift** will temporarily turn ORTHO On. As soon as

you let up on the **Shift** key, ORTHO will be Off again. Likewise, if ORTHO is On, holding **Shift** will temporarily turn it Off.

- Holding **Shift** while in the Fillet command allows you to override your current Radius setting and apply a Radius of 0.0 between the two selected entities.

So, if you're drawing a parking lot and find yourself constantly changing your Fillet Radius between 0.0 and another value to create both sharp and rounded corners, leave the Radius set to something other than 0.0 and just hold **Shift** when you pick the two entities to apply a 0.0 Radius.

These Temporary Overrides are available in all "flavors" of AutoCAD as well as in IntelliCAD.

IntelliCAD Webinar – Do Over

April 26, 2012
Last week I presented a webinar sponsored by Carlson Software on the topic "Updates and Overview of IntelliCAD 7". Unfortunately we had some technical difficulties and didn't get a complete recording to post to the Movies collection on Carlson's website.

For those who are interested, we will be re-doing the webinar on Thursday, March 29th. By that time we expect to have additional updates and improvements to announce.

Keep an eye on this site to register for the next IntelliCAD webinar

You can register for these future webinars by clicking the link below:

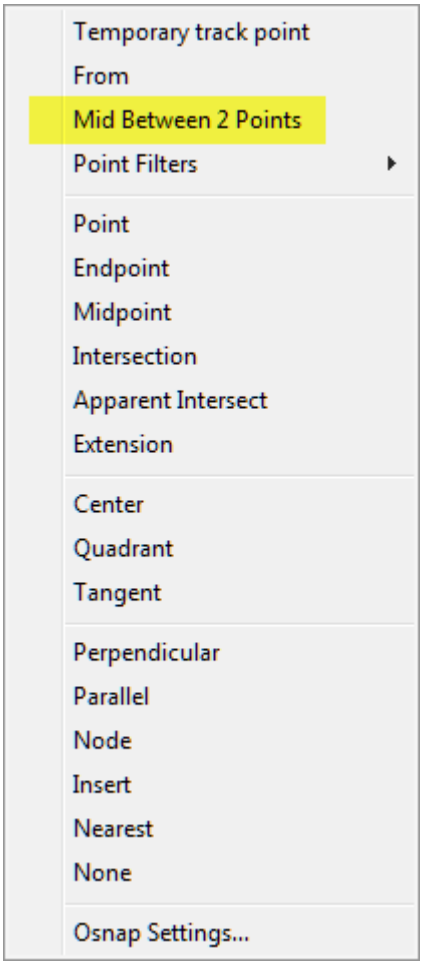
- Tips and Tricks for Setting Points
- Debunking the "Carlson Isn't Dynamic" Myth
- Carlson Annotation and Labeling

Did you know… About the “Mid Between 2 Points” OSnap?

April 26, 2012

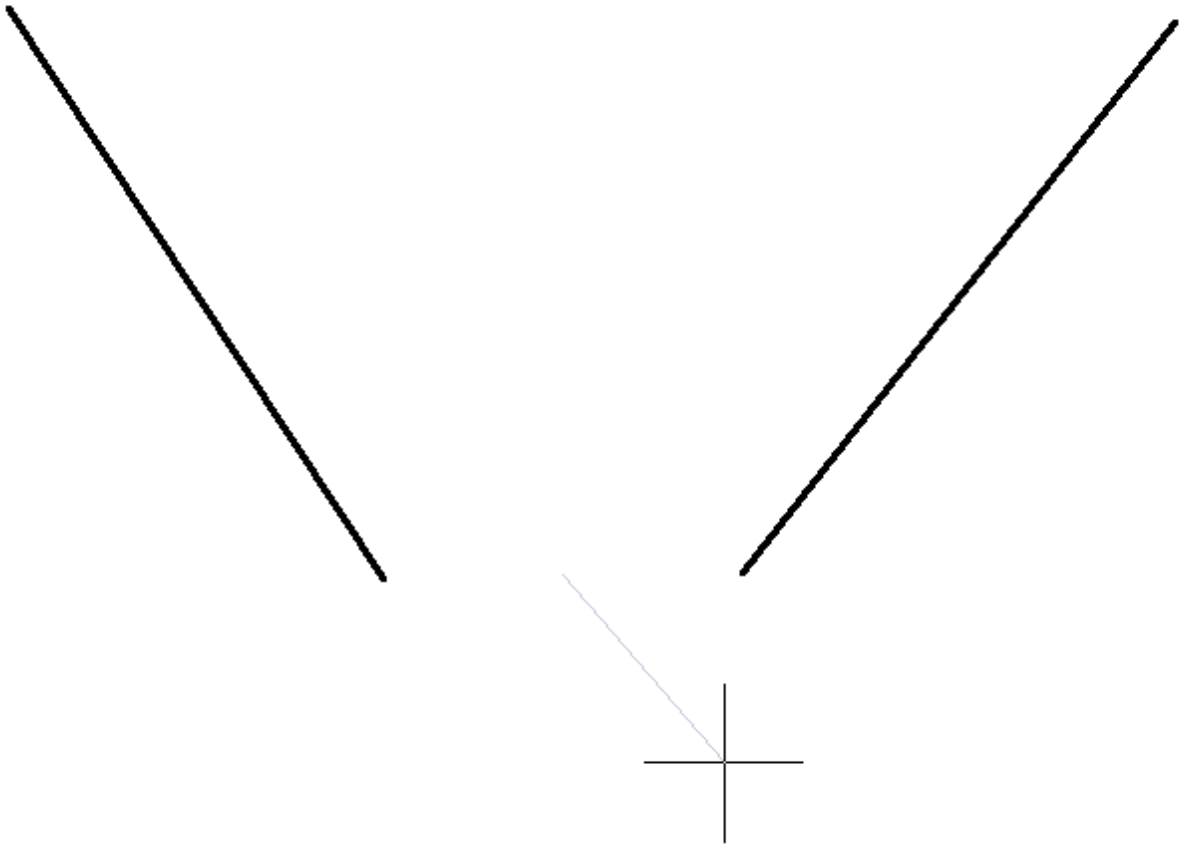
It hasn’t been around forever, but this Object Snap is such a handy little tool you’ll wonder how you ever managed to live without it! The best news is that it’s available both in AutoCAD and IntelliCAD.

Whenever you’re prompted to “Specify a point:”, you can enter “M2P” at the Command: line or you can hold your shift key + right-mouse to display the pop up box and select “Mid Between 2 points” option. This allows you to snap to the MidPoint between two other points. The pop up box is shown below.



Next you'll be prompted to specify two new points for which you can use additional OSnap settings. The example below

shows a new line that starts at the Midpoint between the ENDpoints of the two existing lines.



Special Offer from Esri for Carlson IntelliCAD Users

April 26, 2012
Since the focus of my class and of the NC Surveyors Show as a whole is GIS, I thought it made sense to bump the information about the free copy of Esri software to the top…

Those currently using Carlson with IntelliCAD are eligible for a new "GIS Starter Kit" from ESRI. The Kit includes:

- ArcGIS ArcView desktop software
- A copy of the book *A to Z GIS: An Illustrated Dictionary of Geographic Information Systems*
- A copy of *GIS Tutorial: Workbook for ArcView 9*, Third Edition
- A 10% discount for the ESRI Survey & Engineering GIS Summit ($325 – standard registration price)

To take advantage of the offer, call 1-800-GIS-XPRT

(1-800-447-9778) and request the **Carlson-IntelliCAD GIS Starter Kit** and **please have your Carlson Serial Number available**.

You can read more about ESRI's commitment to survey and engineering services by visiting http://www.ESRI.com/engineering.

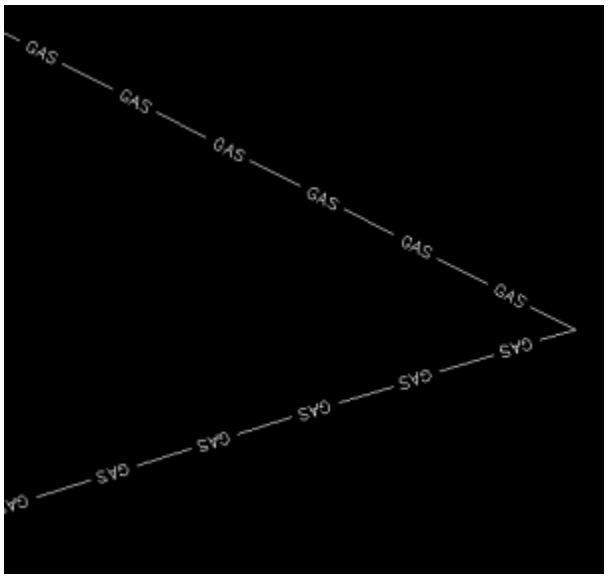
Did you know… About the Upright flag for linetypes?

April 26, 2012
I didn't until this weekend.

While working on a new Picks and Clicks article for Professional Surveyor magazine I stumbled on something

incredibly handy. This setting keeps text that’s inserted into a linetype in an Upright position rather than allowing it to be upside-down.

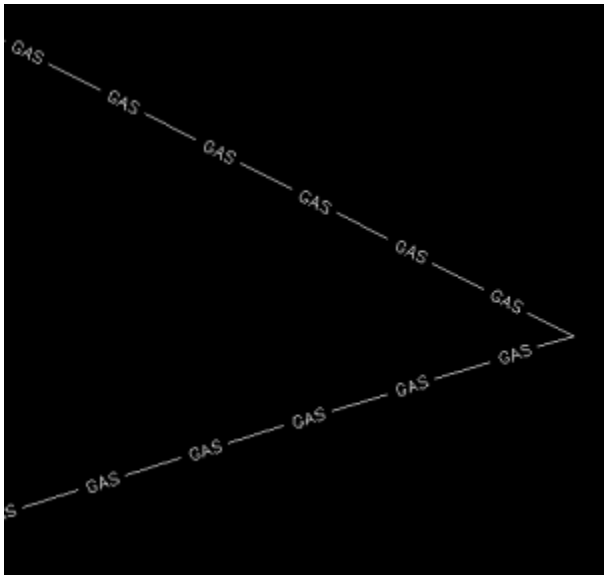
Notice the polyline in the picture below. The top segment (drawn from left to right) has the text upright but the bottom segment (drawn from right to left) shows the text upside-down.



The reason this happens is because of the definition of the

“GAS_LINE” linetype in the acad.lin file.

The R=0.0 parameter formats the linetype text so that it aligns with the line segment. Therefore, whether text is upright or upside-down depends on the direction the line is drawn. However, if you simply change the R=0.0 to U=0.0, the polyline displays like this:



Notice the text is now upright in both segments. Using the U in the linetype definition sets the “Upright” flag. Setting

it to 0.0 keeps it Upright relative to the line. I played around with it a bit and, unfortunately, it doesn't seem to help much when rotating with DVIEW or UCS. But, when you're working in world coordinates, this is a great tool.

To my knowledge this is a recently added enhancement to AutoCAD – but I thought it was cool enough to put up here!

My next column in Professional Surveyor will be… Surprise! Standardizing Linetypes! I'll post a link here when it's posted on their site. Follow this link to see if you are eligible for a free subscription to the print magazine: Subscribe to Professional Surveyor magazine.

Picks and Clicks: Field to Finish Follow Up

April 26, 2012
This article originally appeared in the December 2011 issue

That CAD Girl

of Professional Surveyor magazine.

After we published "Understanding Field to Finish" in the September issue, I received more feedback and questions than I had for any other article to date. Although my plan for this month's column had been "CAD Standards Part 2" (Part 1 is in the June issue), it makes more sense to answer some of the questions that were sent my way about Field to Finish first.

(I am using Carlson Survey for the examples in this article, but corresponding features and commands should be available as part of the Field to Finish feature of most other programs.)

The majority of readers' questions revolve around how to code field descriptions and generate linework for multiple point codes. You use multiple point codes when you have a single field shot that defines more than one feature—for instance, a shot that locates both an edge of pavement and a sidewalk. However, before diving too quickly into multiple point codes, let's make sure we have a good understanding of the different ways that you can use descriptions and linework codes to generate linework.

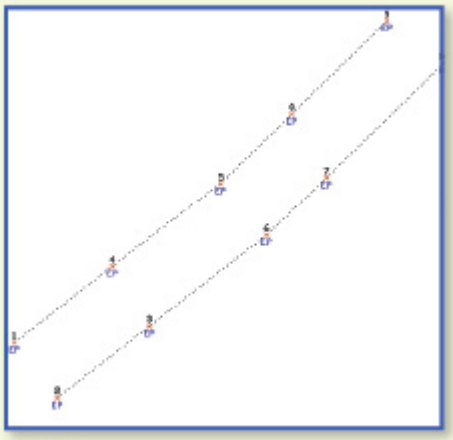


Figure 1

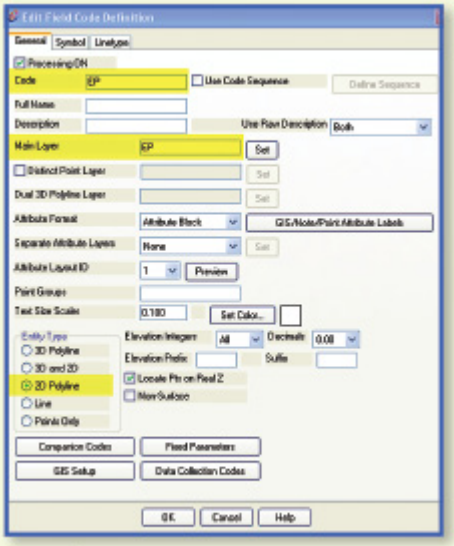


Figure 2

In **Figure 1**, the dotted lines represent the actual edges of pavement that exist in the field. Points 1-10 have a description “EP” designating them as Edge of Pavement.

When locating features that are generally symmetrical and that have two “sides,” such as a road, a sidewalk, or even a ditch having two tops of bank, we have a choice in how best to collect the points. Depending on field (and traffic) conditions, it may make more sense to take all the shots along one side of the road before crossing the road and

taking all the shots along the opposite side.

The other way to collect shots is in what we call Zorro fashion: where we crisscross the street, taking shots on both sides, as we progress down the road. You can see that we used the Zorro style when taking shots in Figure 1. Point 1 is on the northwest side of the road, and shots 2 and 3 are on the southeast side. We then crossed back over to the northwest side to pick up 4 and 5, and so on.

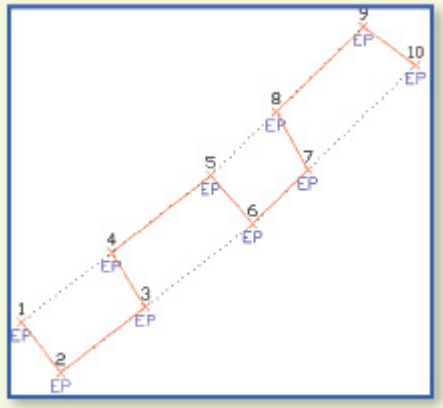


Figure 3

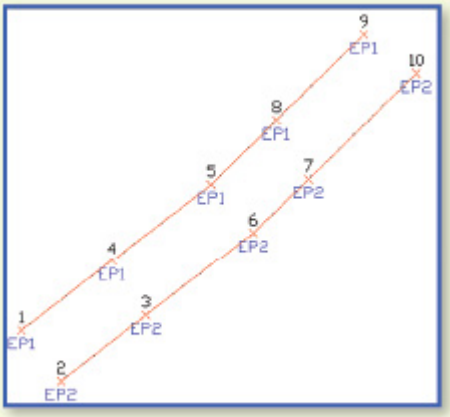


Figure 4

To draw the linework for the edges of pavement, you must create a field code for the EP description. You can see from **Figure 2** that it requires only a couple of specific

settings to indicate that this is a 2D polyline type of entity and on what layer the polyline is to be created.

With the EP field code defined, using Field to Finish to draw points 1-10 generates the linework on layer “EP” (shown in red in **Figure 3**). Obviously this is not quite what we expected. I like to say that this is an example of the software doing exactly what we told it to do … rather than what we meant to tell it to do. So, we need to make a couple of adjustments.

The software understands only that it’s expected to connect all of the EP points with a 2D polyline. Carlson Survey allows you to choose whether the field code points are connected in “Sequential” order or “By Nearest Found.” The default setting is “Sequential,” which is why it connected the points the way it did. Unless we provide a little more information, there is no way for it to differentiate one edge of our pavement from another. If we make a minor change in the descriptions we use, we can have the program generate the linework correctly.

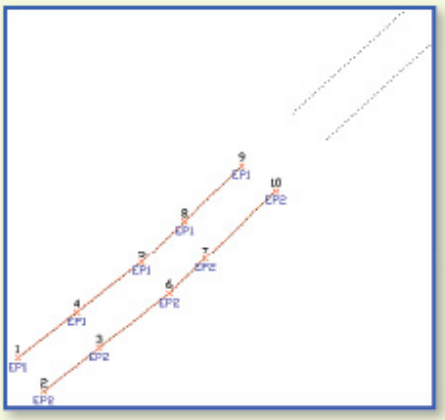


Figure 5

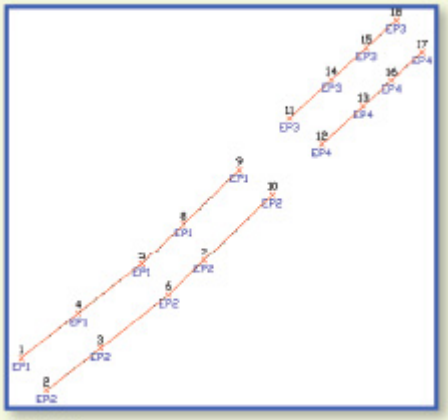


Figure 6

Rather than calling all edge of pavement points EP, we can use a number to modify the description so that we can tell the two polylines apart. We can use “EP1” for the northwest side and “EP2” for the southeast side. Now, when we redraw the points using Field to Finish, we end up with **Figure 4**, which is exactly what we wanted.

It is important to note that the field code does not change even though we’re now using EP1 and EP2 instead of EP. The field code is still “EP.”

Let’s introduce just a little more complexity. Beyond points 1-10, we have an extension of this road with two additional

edges of pavement that are shown as dotted lines in **Figure 5**. We do not want to continue the linework from points 9 and 10 but to start new polylines instead.

If we use descriptions EP1 and EP2 for the new edges of pavement, Field to Finish will assume we are continuing the other edges of pavement. So we must, again, have a way to differentiate the new edges of pavement from the ones drawn previously.

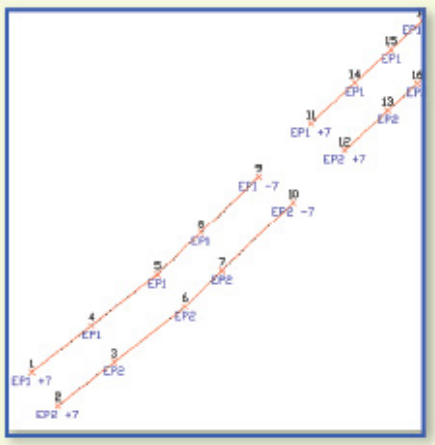


Figure 7

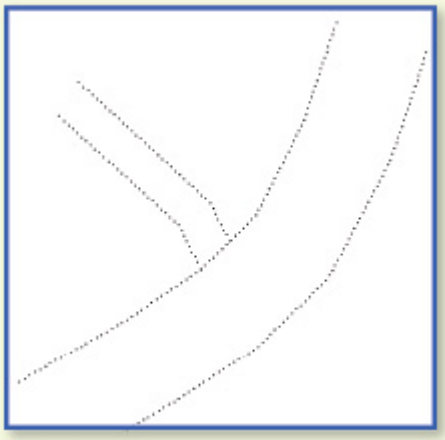


Figure 8

Using the same method as in the prior example, we can use descriptions “EP3” and “EP4” for the new edges of pavement. As you can see in **Figure 6**, this leaves us with the four separate polylines

that we wanted.

The only drawback here is that the numbering of each distinct edge of pavement could get confusing on a large site. In this example, once they've been used, EP1 or EP2 can't be used again without Field to Finish thinking all the EP1 points are part of the same polyline.

The good news is that it only requires another small coding difference to allow you to re-use EP1 or EP2 again. In **Figure 7**, we still use the EP1 and EP2 descriptions, but we use them in combination with special linework codes "+7" and "-7." In Carlson lingo, "+7" is the default code to "Start a new polyline" and "-7" is the code to "End the polyline." You can see that once we have descriptions "EP1 -7" and "EP2 -7" at points 9 and 10, we start new polylines by reusing EP1 and EP2 at points 11 and 12. As long as you're diligent about using the "-7" special linework code to end the previously drawn polyline, you can reuse the descriptions.

Multiple Point Codes

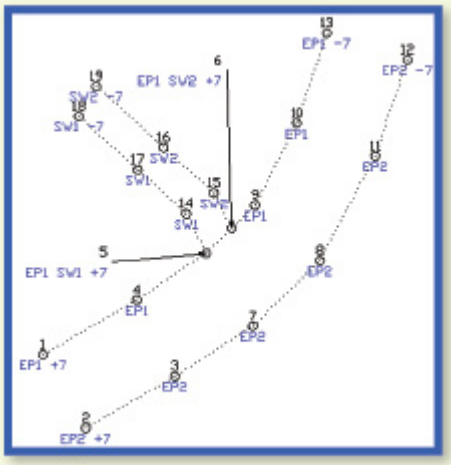


Figure 9

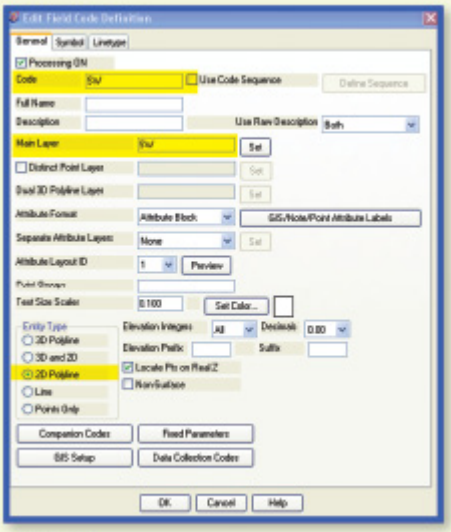


Figure 10

You use multiple point codes when you have two site features (such as the edge of pavement and a sidewalk) that intersect. As you can see in **Figure 8** there are two points where a sidewalk meets the edge of pavement. In **Figure 9**, you can see the descriptions we used so we could have Field to Finish process points 5 and 6 as part of both the EP and SW linework entities.

Point 5's description "EP1 SW1 +7" means that this shot is a vertex along the current EP1 polyline and also starts a new polyline named SW1 to define the edge of the sidewalk. Point 6's description "EP1 SW2 +7" means that this shot is also a

vertex along the current EP1 polyline and starts another new polyline named SW2 for the other side of the sidewalk.

To have Carlson's Field to Finish process these points as shown, we had to create only one additional field code: the "SW" code for sidewalk. We set the Entity Type to 2D Polyline and set the Main Layer to "SW" (**Figure 10**).

Now, let's take a closer look at the descriptions for points 5 and 6 (**Figure 11**). In Carlson Survey, if you use a space between two descriptions, the program allows you to process them separately using the two corresponding field codes. The corresponding field codes used to process these descriptions are EP and SW so Carlson will process the same point twice, first using the EP field code and then again using the SW field code.

5	5015.03	5080.72	0.00	EP1 SW1 +7
6	5023.84	5089.72	0.00	EP1 SW2 +7

Figure 11

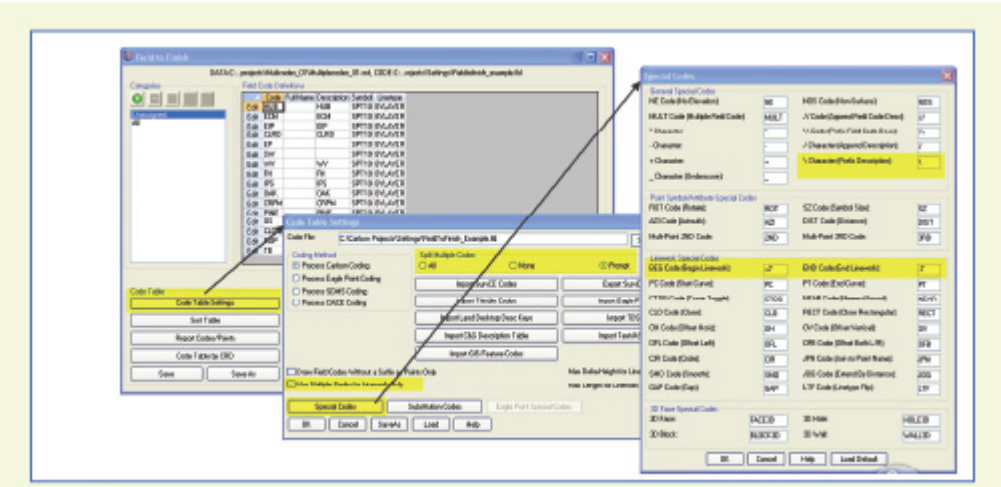


Figure 12

Because having a space in a point description is an indicator to Carlson that multiple field codes may need to be processed, it is a best practice to avoid using spaces in your descriptions. Using a description such as 24” RCP PIPE can create several problems, but the main one is that Carlson will think it is supposed to process three separate field codes: one for 24”, one for RCP and one for PIPE. A better description would be PIPE/24” RCP. In this example, a field code named PIPE would be processed. And, because a forward-slash (/) separates PIPE from 24” RCP, Carlson considers everything after the slash as a comment and will ignore it when processing Field to Finish.

If you follow the maze of dialog boxes in **Figure 12**, there

are several settings to take note of:

- In the Code Table Settings dialog box, there are three possible settings for Split Multiple Codes.

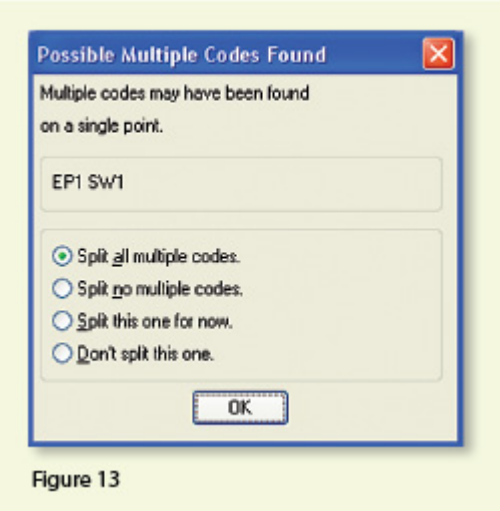


Figure 13

- If you select “All,” any point description that contains a space will be processed as a multiple point code. If you select “None,” all spaces will be ignored when it comes to processing multiple point codes. If you select “Prompt,” you will be prompted with the dialog box from **Figure 13** each time a space is encountered in a point description.
- In the Code Table Settings dialog box, select the option to “Use Multiple Codes for Linework Only.” This causes Carlson Survey to create both the EP and SW

linework on their respective layers but only one point (created on the layer specified by the first field code). If you do not select this option, the program will create two points with the same point number but with different descriptions. Each point will be inserted on the layer specified by its respective field code.

In the Special Codes dialog box, you can see the default settings and are able to customize the Special Codes used to process descriptions, points, and linework in Field to Finish.

With that, I hope I've been able to answer a few more of your Field to Finish questions. Please don't hesitate to call or email as needed. I hope everyone has a fantastic holiday season, and I'll see you back here in 2012!

This article originally appeared in the December 2011 issue of Professional Surveyor magazine.