Universal Map Sharing

John Balcom

With the release of Version 6.5 this past August, the folks at Traverse PC have introduced a nifty new concept called "Universal Map Sharing" (UMS). UMS is all about being able to create and use your survey maps in a computerized world. Whether you are sending a drawing to the home office for review, creating exhibits for a published report, or printing extra copies of a map for a client, UMS opens the door for you to share your drawings with the world.

UMS answers a lot of questions and solves a lot of problems for surveyors. And it does so without creating a whole new set of problems in the process because it's built on common technology. That's what this review is all about. We'll talk about some of the problems you may be currently experiencing with your map sharing and how UMS can help.

How many of you have sent off a DWG file of your survey only to discover that the client firm doesn't have the same version of AutoCAD you have—or uses a non-AutoCAD drafting program—so back and forth you go until you figure out what works and what doesn't. That's not so bad if you only have one client, but what if you are working with five clients—just this week? Wouldn't it be nice to send them a file they could just double click to open—regardless of what software they use in-house?

Or, what about the drawing files you created two years ago with an old version of your software. Will everything look the same when you open and plot it? Or what if you've changed software programs?

Or, how much of an inconvenience is it to drop everything you are doing just to print out another copy of a map for the client who just walked in the door? Wouldn't it be nice if anyone in the office could plot them a copy? Or better yet, what if you could give them a copy of the drawing they could plot themselves—without any special software?

If some of these problems are your problems, then read on. UMS may just simplify your life. And in our computerized, technically challenging and overly complex world, simple is always welcome.

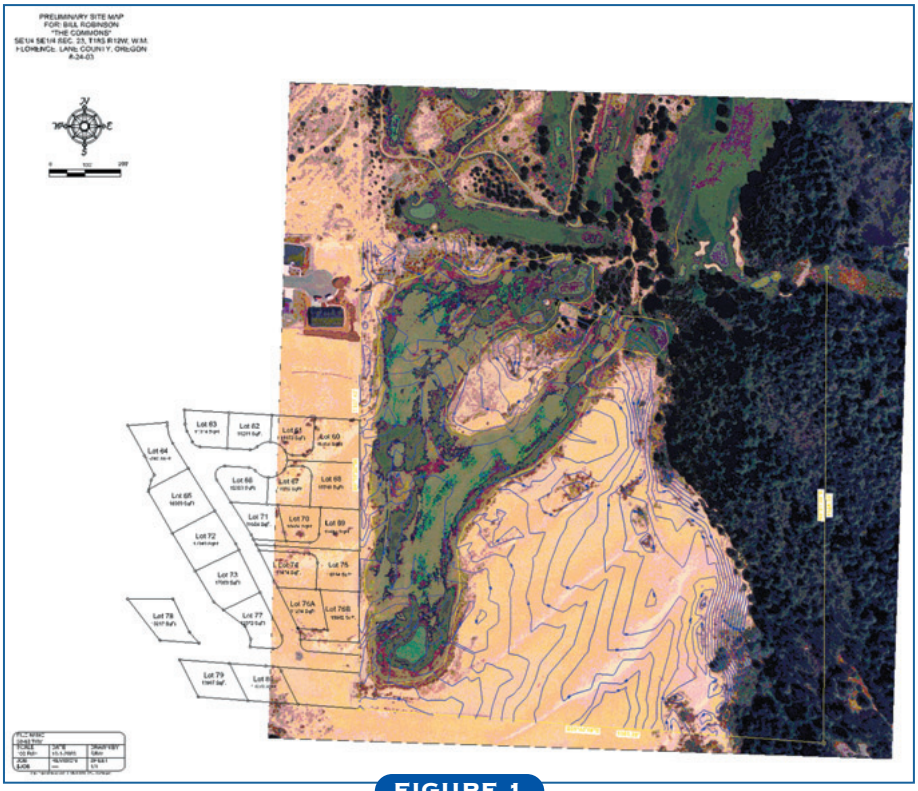


FIGURE 1

What is Universal Map Sharing (UMS)?

UMS is Traverse PC's ability to save a drawing of a map in any one of the most common file formats and share it with someone in a format they can use, regardless of what software they have. UMS also has the ability to open a drawing file someone sends you and use it for surveying.

The current version of Traverse PC Desktop V6.5 supports a number of file formats in UMS. They are Windows Enhanced Meta files (EMF), Windows Meta Files (WMF), AutoCAD drawing and drawing exchange files (DWG and DXF), and shape files (SHP). TPC supports other graphics file formats like JPG, TIF, GIF, BMP, and ICO, but this article will focus primarily on the EMF files, since they are arguably the most useful for sharing maps.

Archive Drawings

If Traverse PC Desktop (TPC) can draw it, the EMF file can archive it. Think of EMF files as a snapshot of the drawing. Once the EMF file is written, you have an archive that is 1) software independent, 2) device independent, 3) operating system independent, 4) resolution independent, 5) scale independent and 6) expertise independent.

Software Independent

EMF files are just the latest version of Windows Meta Files. Originally called WMF for Windows Meta Files, they have been around a long time and are a defacto standard (even AutoCAD can write a WMF file). Just double click an EMF or WMF file in Windows XP Explorer and presto—you're looking at your drawing. It's hard to imagine any Windows com-

puter that would not be able to open and plot a WMF or EMF file.

Device Independent

You can plot an EMF file to any printer or plotter because EMF files are device independent. EMF files contain drawing commands like drawing a line from point A to point B. It's up to the printer or plotter to draw the line. The result is that you get the best line your printer or plotter can possibly draw between those two points.

Operating System Independent

EMF files are not tied to a particular version of Windows. A WMF file written by a Windows 95 program back in 1995 can be opened and plotted by Windows XP in 2004. Plus, even many non-Windows programs can open EMF and WMF files.

Resolution Independent

EMF files are vector files, not raster files. They contain commands to draw a circle with a certain radius and line width or draw text with a certain font and text height. It's up to the operating system, the device driver, and the printer or plotter to draw the best circle and text they can.

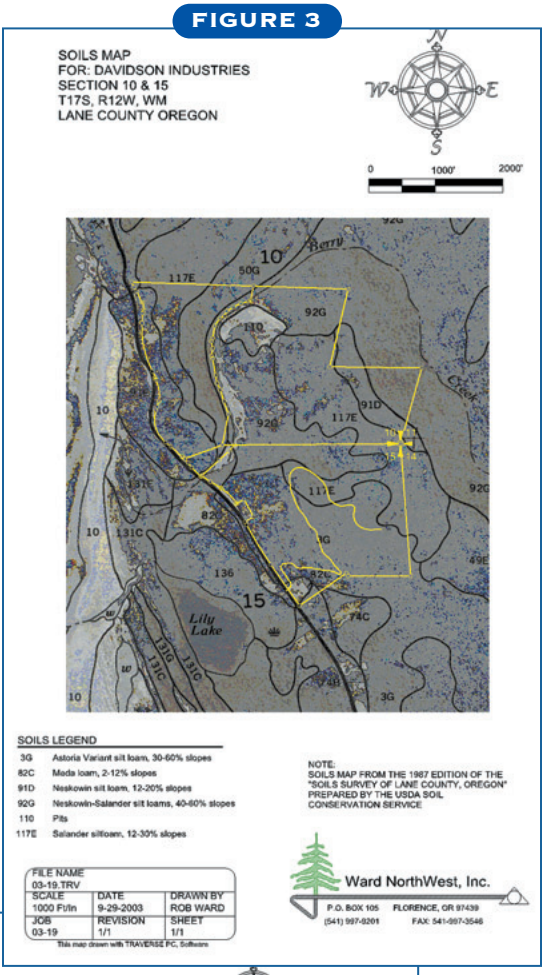
Scale Independent

You can plot the same EMF file to your printer on an 8.5" X 11" page or send it to your plotter on a 24" X 36" page. All of the pieces of the drawing scale automatically to fit the page size. And since everything in the file is vectored, your text will still be readable at small scales. You will be pleasantly surprised the first time you plot your 18" X 24" map to an 8.5" X 11" printer. Even the text is readable.

Expertise Independent

If someone in your office can open a file in Windows and put paper in the plotter, they can plot copies of your drawings. With TPC, forget buying another copy of AutoCAD and training someone how to run it just to make copies of drawings. The viewer in Windows XP is the easiest way to plot your draw-

FIGURE 3



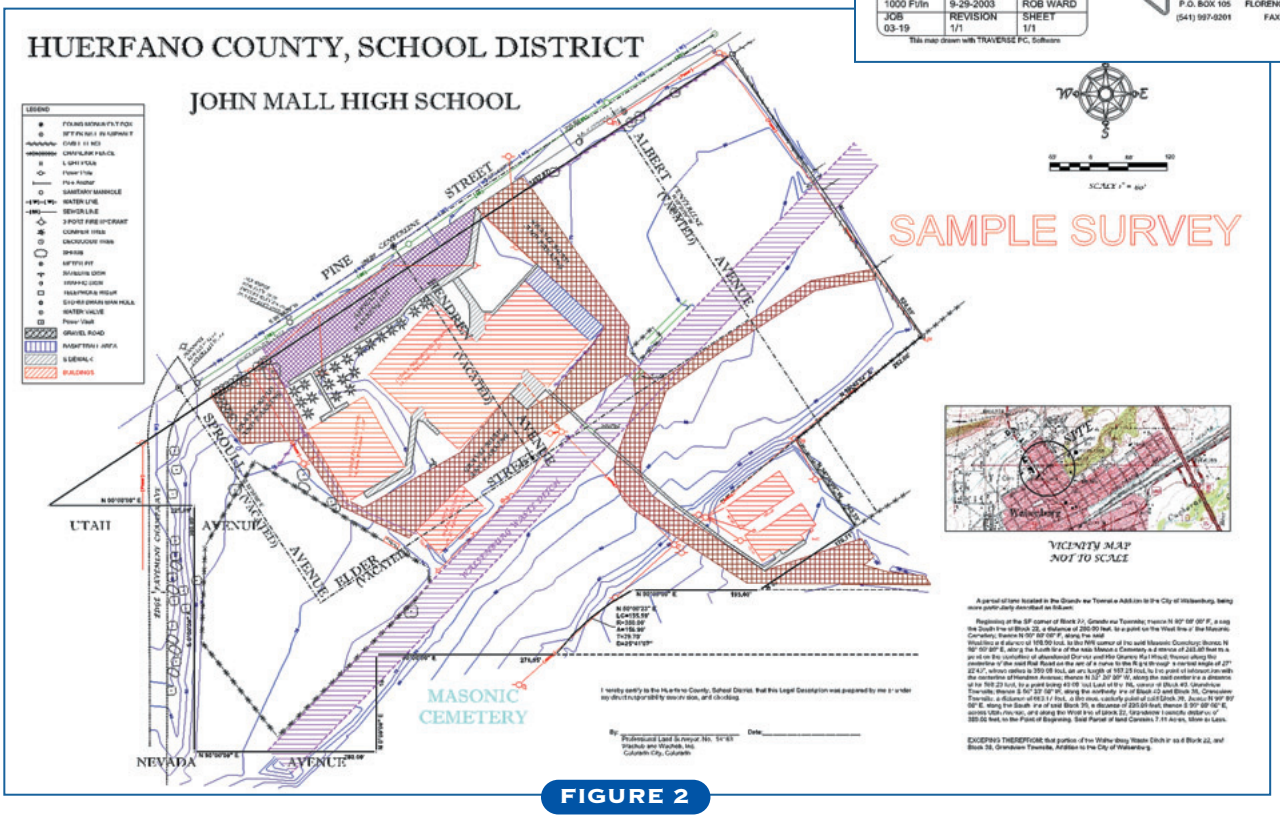


FIGURE 2

ings. It has a Print Wizard that walks you through each step as you select a printer or plotter, the page size, and how many copies you want. You can even use it to produce black and white versions of color maps.

No Extra Software Required

If you send someone a DWG file, they need some CAD software like AutoCAD or viewing software like Volo Viewer Express to view it. If you send them a shape file, they need GIS software to open it. The problem of course, is that not everyone has the same software. Nor are they likely to drop $3,500 for a copy of AutoCAD just to view a drawing or print their own copy of it.

UMS doesn't require any special software because it relies on industry standard file formats already supported on your computer. Opening a UMS file is as easy as double clicking it in Windows XP or opening the file in your WEB browser in any version of Windows or Mac.

Include Drawings in Desktop Publishing Programs

EMF files can be used in most Desktop Publishing programs—even non-Windows ones. They can be inserted into or linked from any of the office suites, Microsoft Word, WordPerfect, Star Office, Corel, and others. Once the EMF file is inserted or linked into the document, you can resize it without losing any clarity, wrap text around it, or whatever else is needed.

Submit Drawings for Approval

Because EMFs are vector files, you can zoom in on them as much as you want without distortion. Because the drawing is an image, the original objects are "locked down." The reviewer can't go in and just move something around. They can however, "mark up" the image with revisions and send it right back to you. The folks at Traverse PC are doing this now when they submit surveys to the local county surveyor for review.

Distribute Drawings to Clients

Let's assume you are designing a subdivision for a developer. In a matter of minutes, you create archive drawings for each lot and write them to a CD. Now the developer can print out a copy of each lot as needed. Print an 8.5" X 11" exhibit for the planning commission and an 11" X 17" for the contractor. And remember, he doesn't need any special software, just your CD. How will that make you look?

Produce Copies of the Drawing at Any Size

With EMF files, it's just as easy to create an 11" X 17" copy as it is a 24" X 36".

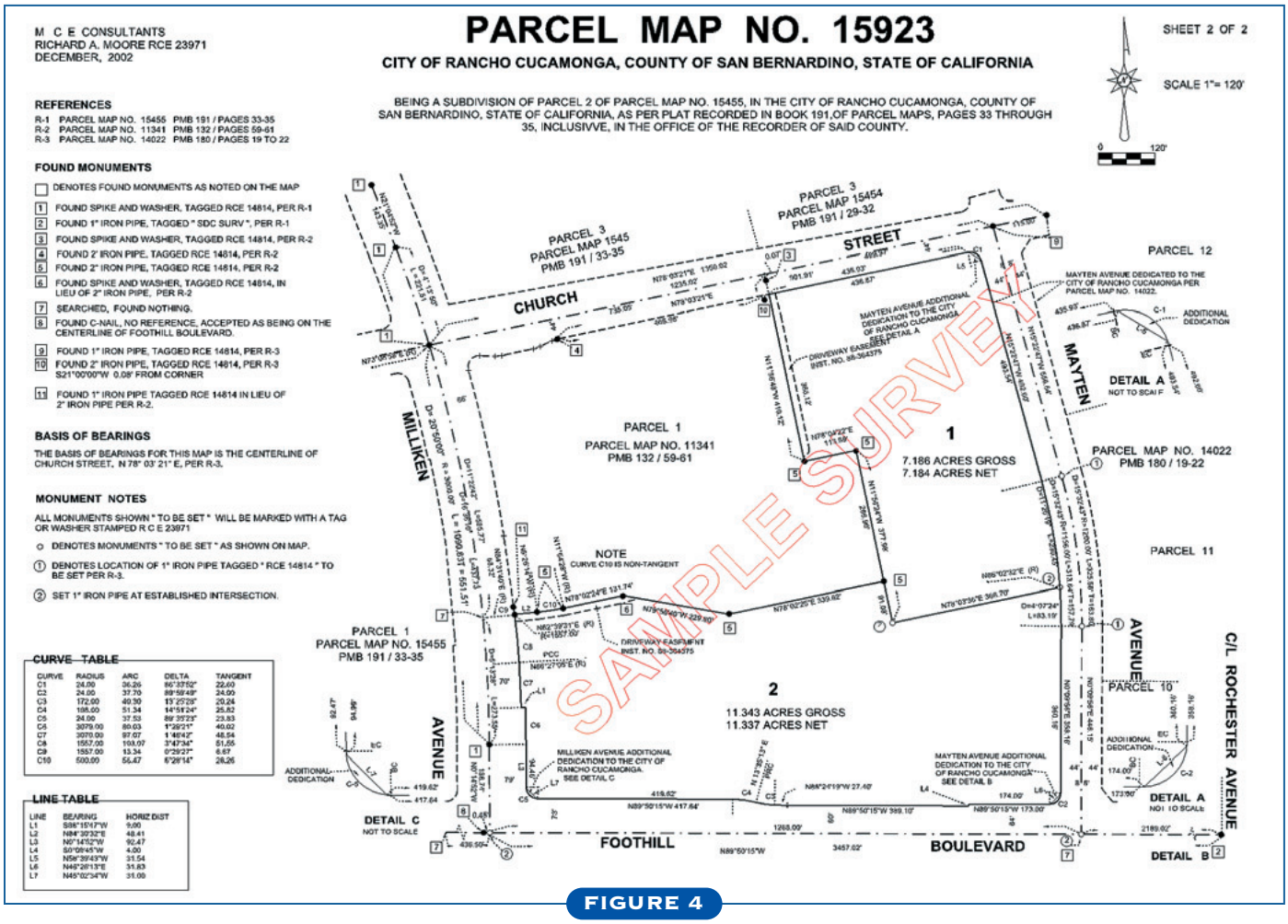
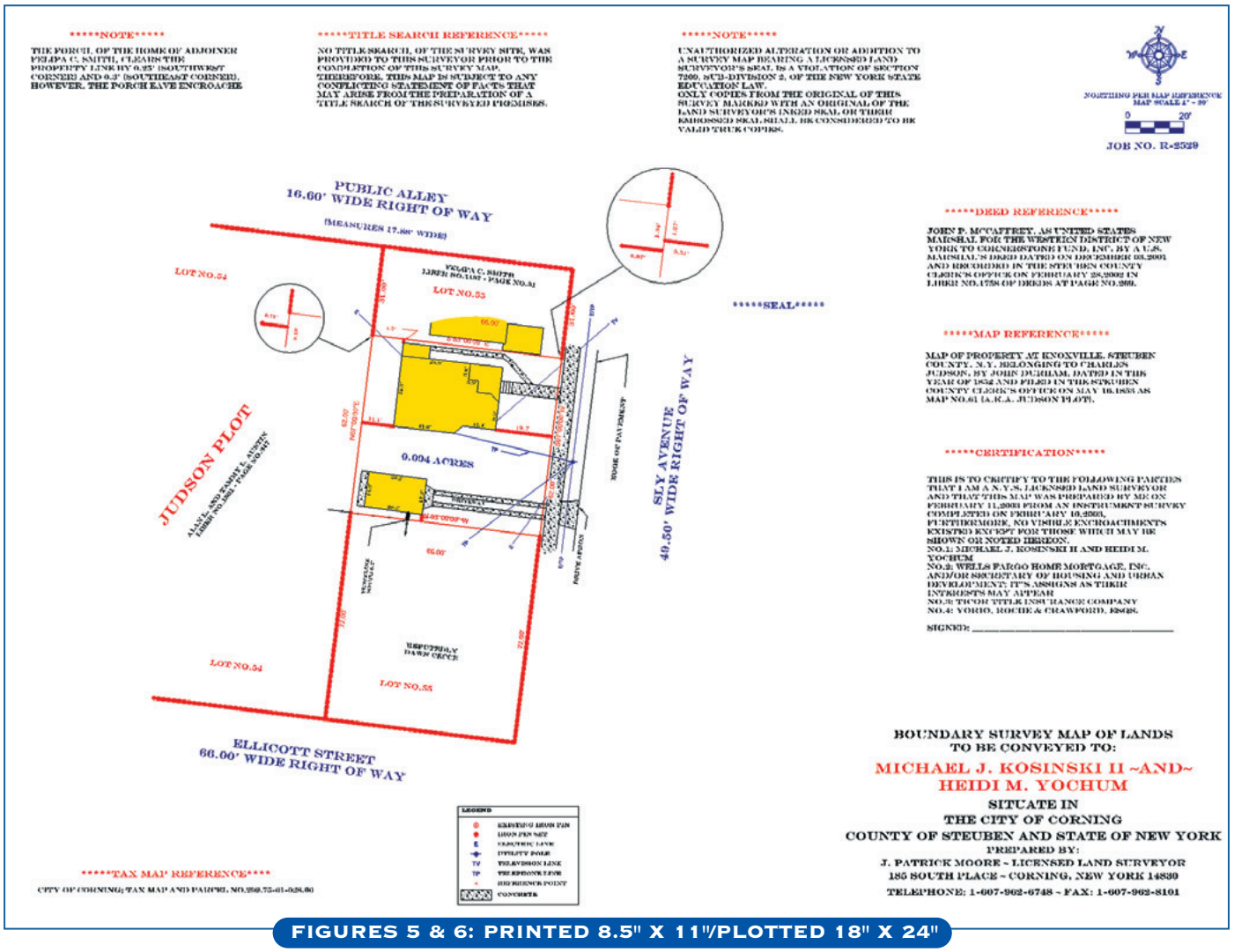


FIGURE 4



FIGURES 5 & 6: PRINTED 8.5" X 11"/PLOTTED 18" X 24"

And copies can go to any device that supports the page size you want. The EMF file takes care of scaling the drawing up or down to the page size you want.

Sending Your Drawings Out to Be Plotted

If you don't own a large format plotter, UMS is the perfect solution for you. Create the drawing in TPC the size you want it (18" X 24" for instance). In TPC, you always work in page layout mode, so you see the actual page as you create the drawing. When you are ready, create an archive and print it at whatever size your printer supports. Make any necessary changes or submit it to the county surveyor for review. Then, when you are finished with the drawing, write another archive and e-mail it to whoever does your plotting to print the final map on the size paper you need. The best part is that the ones doing the plotting don't need to do anything but put the right size paper in the plotter. It really is that simple. You'll get just what you sent them every time.

Thumbnails Help Organize Drawings

EMF files can be viewed as thumbnails in Windows Explorer. Think about a 20 lot subdivision or a 10 unit timber sale. Each lot and each unit is displayed as a thumbnail when you go to open it. And the Windows XP viewer lets you open multiple drawings at a time—just select the ones you want and you can move between them right inside the viewer—rotating, zooming and printing whichever ones you want.

Display Drawings on Your Website

EMF files are displayed perfectly in a web browser. Because they are vectored, others can zoom in without distortion to see fine resolution or download the file

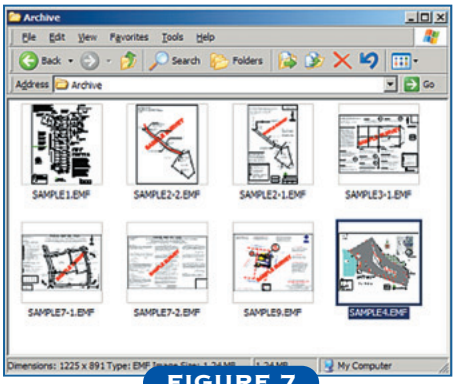
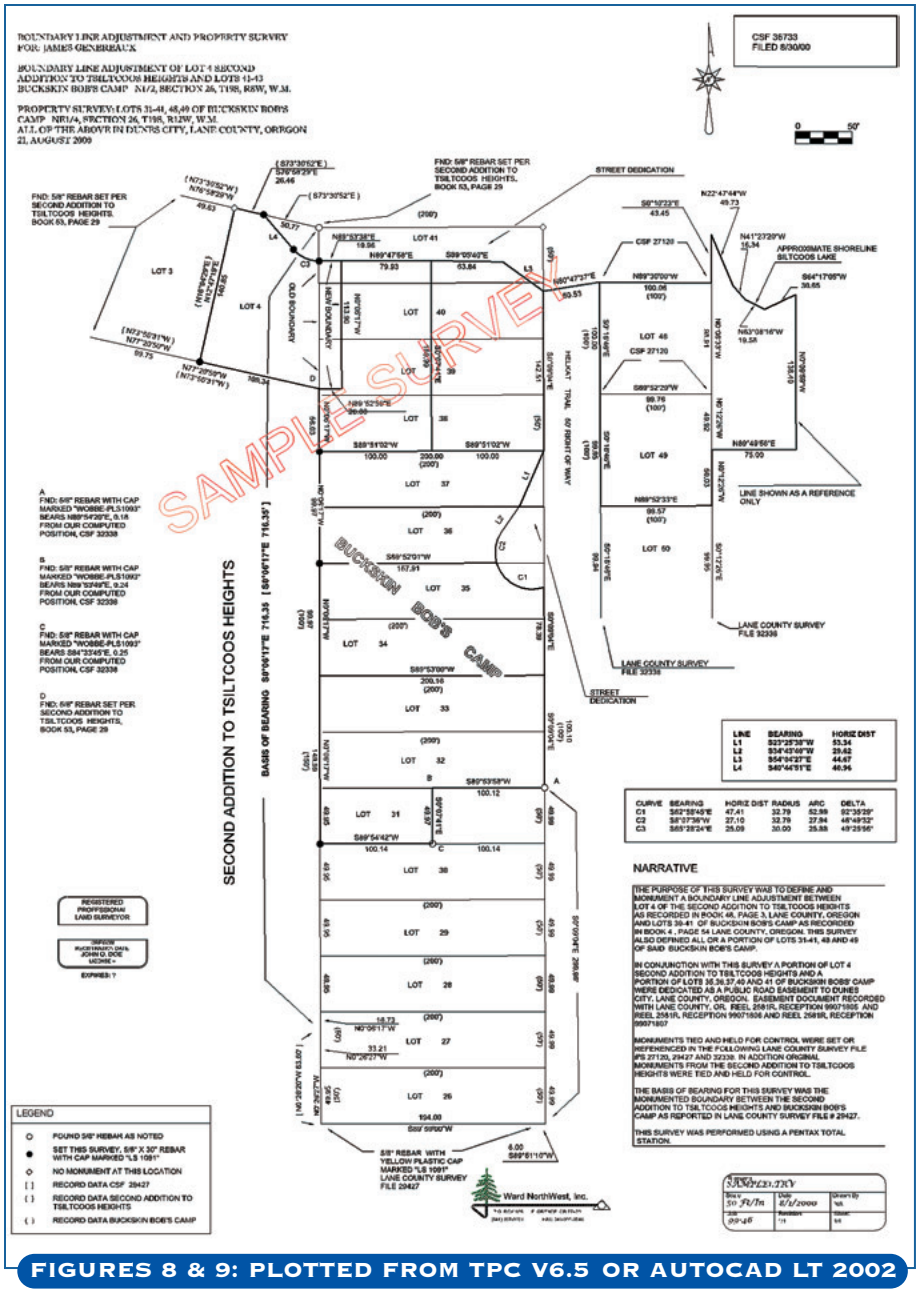


FIGURE 7



FIGURES 8 & 9: PLOTTED FROM TPC V6.5 OR AUTOCAD LT 2002

and print out a copy. Use this feature to advertise your business on the Web or send out drawings for review within your own business enterprise.

Share Designs with Architects and Engineers

If you need to share designs with architects and engineers, EMF files may not be enough. In this case, you may want to share DWG files. UMS supports AutoCAD R13 through R2000 versions in DWG, DXF and DXB formats and all versions in a generic DXF format.

The primary purpose of the DWG and DXF formats is to share data. All of the entities and their coordinates are available to either AutoCAD or TPC via these formats. In addition, if you have AutoCAD R14 or later, your drawings will show up in AutoCAD looking just like they do in TPC—exemplifying the "CAD Friendly" nature of the No CAD Zone.

Share Spatial Data

To share spatial data, UMS supports ESRI shape files (along with their corresponding index and data base files). Once a boundary is defined by a traverse, you can export it via a shape file as a polygon. And shapes you import into TPC can create new traverses or equivalent polylines in a drawing. For sharing spatial data, UMS provides the best of both worlds—data and drawings.

Additions to UMS

UMS is so much more than just the file formats it currently supports. It's a framework for sharing your data and drawings electronically via a local network, the Internet or in an enterprise environment. The UMS framework provides a way to share data and maps using the most popular file formats at the time. The formats can change as needed, but the UMS framework doesn't.

To that end, the folks at TPC are also adding support for **AutoCAD 2004**, **Adobe PDF** and **LandXML**, which may be available by the time you read this. Compatibility with AutoCAD 2004 brings the "CAD Friendly" No CAD Zone to a new level of data and Universal Map Sharing with AutoCAD. The Adobe PDF V6 is also most promising in that it supports AutoCAD layers and tracks revisions. Although it requires Acrobat Reader, and is overkill for the private land surveyor, it is the perfect tool for the enterprise environment.

Choose the UMS that's Right for You

UMS has something for everyone. If you just want to archive your drawings and produce exact copies any time in the future, UMS can help. If you need to exchange data and drawings with design professionals or municipalities, UMS can help. UMS really does have something for everyone.

JOHN BALCOM *started Traverse PC surveying software in 1987 and has been a principal in Ward Northwest Inc. (a land surveying and forestry consulting firm) since 1989.*