



**By Joel Leininger, LS**

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## The Digital Surveys Archive

**A** show of hands now: How many of you produced a hand-drawn plat or map within the last month? Within the last year? Undoubtedly there are surveyors still drawing by hand, but their numbers get smaller and smaller as the years pass. For the rest of us, the digital age means not only that computations and finances are handled on a computer, but the drafting as well.

We have explored aspects of the digital age's impact on surveyors before, but this

an aid to future projects, but as a defense against potential negligence claims. Accuse them of substandard work, or of not complying with this or that regulation, and they can trot out the files in question to prove their innocence. Thus, after the expiration of the statute of limitations on such claims, there is no value to retaining those records. This has dramatic implications for how, *or whether*, one indexes those papers. Since any negligence claim will concern a specific project, there is no need for general location-based indexes. Surveyors, on the other hand, view the

engineering firms face an uphill battle getting approval to spend the non-billable time creating them.)

### **Non-specialized Software**

Central to the concept of a well-designed digital archive is the notion that its contents do not require specialized software to be accessed. In other words, it is unwise to assume that the software now present on your machines will *always* be available in the future. None of us can know what lies around the corner, much less what lies around corners to be approached 30 or 50 years from now. Yet surveyors, by doing nothing, assume that the original software will suffice. History indicates otherwise.

Digital file formats, a sore that has yet to heal over, bedevil long-term archive planning. Because of licensing and other format issues surrounding commercial CAD software, retaining the drawing file itself as the archive vehicle is not a wise option. In fact, reliance on *any* vendor-controlled format is a dangerous practice. But CAD files are not necessary for our archives. We surveyors want those drawings not to manipulate or change in any way, but merely to read and understand, decades or even centuries later. Surveys never expire, only surveyors do! So our accessing these drawings does not require our being able to modify them, the primary advantage of a CAD format.

So if the CAD files are not the best candidates for archival storage, what should be used? The feeling of archivists is that uncompressed color or gray scale TIF files provide the best digital format. That format preserves all of the information from the initial scan, and is able to be modified in the future with no loss of

*continued on page 71*

## Reliance on *any* vendor-controlled format is a dangerous practice

time we'll examine a different aspect of it: the archive of your finished work.

Instinctively, surveyors hoard the results of their work, primarily for two reasons: first, it is likely that the work will be useful in the event that a future project is in its vicinity; second, at the end of their career, the records will be worth millions. Okay, I'm dreaming about that last part, but most surveyors at least hold out hope that the accumulated mass of records will convert into greenbacks when the time comes to put away the tripods for good.

(As an aside, I have observed that firms run by engineers generally have poor records indexing systems. Engineers view retaining records of their prior work not as

records as both the defense above, and also as having the potential to inform future work. Thus, knowing which of those old records are relevant to current work, generally a proximity-driven test, is an important asset. Unfortunately, the firms run by engineers tend to extend their records perspective to their survey archives as well, the result being that their survey archive indexes are something of a shambles too. I am not pointing fingers here—I have worked for both types of firms—and there are probably notable exceptions to this rule. But I think, in general, my observation is accurate. Maintaining location-based indexes comes at a cost, and the surveyors in those

original material. It also results in very large files, in case you were wondering, which is its biggest detriment. In contrast, our firm uses JPG files as primary archive format, because the files are about 10 percent the size of a comparable TIF file. JPG files intentionally discard some material during the compression process, and repeated compressions and saves materially degrades the image. Hence, the archivists' objection. But these drawings are archives, not working drawings. We never modify them, nor will we in the future, and thus, do not subject them to multiple compressions. Our experience has been very positive.

### **File Size**

It may occur to you that file size is becoming less important as the equipment we play with gets more powerful. And this is true; however, it is not accurate to say that it is irrelevant. Having the same drawing represented in two equally readable and usable formats, but one being ten times the size of the other, restricts flexibility in the larger file's use with no corresponding benefit. Emailing large files continues to be a problem. It may not remain so in the future, but it is hard to imagine being tripped-up because a file is too *small*. Thus, all other things being equal, smaller file size is better. The most important thing is for surveyors to have files in formats widely available now and in the future, and not controlled by any single entity. TIF, JPG and GIF files all satisfy that criteria, the patents having expired in the U.S. Moreover, multiple viewers are available from multiple sources for each of the formats, and thus are all worthy of consideration for your archives. Those are safe formats.

### **Case in Point**

About a year ago, our firm ceased generating finished drawings (and internal worksheets, for that matter) on "reproducible media." We now print out multiple copies of drawings on bond paper for our clients and others, and also one "for us," which gets scanned and uploaded into our permanent digital archive. Should we need another copy, we print out a copy of that scanned image. The results, if I may say, are impressive.

The digital age brings with it many advantages, and many opportunities for failure. Don't let your survey archives fall into the latter category. It will doom them to irrelevance. 