



By Joel Leininger, LS

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Our Role in Machine Control

In the March issue, I discussed the imminent demise of both field-run and aerial topography at the hand of freely-available satellite data. Those particular wheels have been in motion for some time and there is little we surveyors can (or should) do about it. This topic touched off several other discussions with colleagues, and brought to mind the recent dust-up in California with respect to machine control.

In case you are not from the Golden State, or have been otherwise occupied for the last several months, the controversy surrounds GPS-controlled construction equipment and whether or not contractors employing it are illegally practicing surveying. Essentially, machine control bypasses the surveyor translation of design-to-field, instead using a target digital terrain model and RTK GPS. Attaching that pair to earth-moving equipment on a construction site can be a potent combination. One thinks of pressing a few buttons and having one's site graded automatically. It's not quite that simple, of course, but it is easy to see why contractors would be interested in it.

The California code defines the practice of land surveying rather broadly in my opinion (but that's all right), and includes construction stakeout within its scope. Triggering the recent debate was a question whether supplying digital design data (or digital topo) to a contractor would constitute aiding and abetting an illegal act! Now we are to treat digital design as a controlled substance? The situation would be comical if the stakes for surveyors were not so high.

Whose Ox is Gored?

Let's dispense with all the fluff and get right to it. This is about turf and loss of income. Period. Surveyors (and everyone else except earth-moving contractors) would ignore GPS-driven equipment if it did not mean the loss of fees for professional services. Is anyone anywhere arguing that the public is at risk here? After all, construction stakeout screw-ups are some of the fastest surveying mistakes to detect. No one discovers the inlet is in the wrong

has his "layout guys" onsite every day supporting the carpenters and others, and The Republic does not seem to have suffered. Can we really claim a threat to the public? If so, how is it that surveying equipment can be sold to anyone, not merely those with licenses?

The Risk and The Reward

In the last issue I opined that site designers are not forced to use any particular data as a basis for their design, and indeed could use no data at all if they

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place 15 years after it was built. We have that potential with boundary issues, of course, but stakeout? I think not.

My state of Maryland has similar language about construction stakeout, which, if taken literally, would prohibit carpenters from laying out an interior wall by themselves! Of course, no one has ever paid the slightest attention to that silliness, but the inclusion of dismissable language is a Bad Thing for a statute to have, because it invites dismissal of other language that actually should be enforced.

One might inquire whether including construction stake-out within the exclusive domain of licensed surveyors is really necessary. I have been on many construction sites where the contractor

saw fit. Stopping them from doing so, of course, is the probability that the design will fail when constructed, exposing them to liability from their client. This is as it should be. Designers are expected to analyze the data available, decide upon its sufficiency, and complain if it is not up to snuff. In the same manner, the contractor has an obligation to employ tools and labor sufficient to build in accordance with the plans. If he chooses to use unskilled carpenters, who end up costing him additional time and money to do things twice, he bears the extra expense. Likewise, if he chooses to invest in heavy machinery rather than employ a legion of laborers with shovels, he takes the financial risk,

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and is entitled to the reward. What then is the difference in his employing GPS-enabled equipment rather than hiring a survey crew? If we require him to hire the crew, despite his knowing that the alternative GPS method would better suit his operations, we have engaged in featherbedding: the practice of requiring the employment of a certain type of people even after technology has obsoleted their job. Is that where we want to be?

Opportunity

There are many aspects of construction machine control in which we should involve ourselves, including initial control setup, quality control, performance monitoring, etc. Additionally, my experience has been that digital files from many designers are not really three-dimensional files, but instead are a series of two dimensional files. In other words, the designers have used a computer like a pencil, and have not taken advantage of its potential in creating a seamless target terrain model. Obviously such a digital product would be of no use to the GPS-enabled contractor, and thus an opportunity exists to create one that the contractor can use. This will probably diminish over time as older designers die off and true three-dimensional design takes hold in civil shops. In the meantime, however, it has been the surveyors all along who have been interpreting those designs. And, as a class, we have been computer-savvy from way back. We serve as a go-between for the contractor and designer. Not by fiat, but as a natural fit.

So here is how I see it: There should not even be a hint of featherbedding surrounding our practice. (Nothing encourages cynicism on the part of our clients and allied professions faster.) When surveying skills are *genuinely* required, the law ought to require licensed surveyor involvement. And when they are not, the law ought to be silent. (In my opinion, construction stakeout falls outside of required surveyor involvement – there are too many examples of success, despite our non-involvement, in the marketplace.) We ought to *encourage* our contractor clients to convert to GPS-enabled equipment, and stand ready to assist them in the support tasks that conversion will engender. There will be work for those able to see around the corner. 