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JULY 2015

THE LAST VOYAGE

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Staking a Claim to the Future

Western New York firm finds conventional survey is a gateway to providing additional expertise.

The hallmark of any great organization is not how well it reacts to change but rather how effectively it can anticipate it. For Ravi Engineering and Land Surveying, P.C., which had developed a solid, profitable survey function within the company, anticipation and follow-through have been key strengths throughout its two decade history. So when company principals identified the direction survey seemed to be headed, they began making efforts to be better positioned for that change. In a move that seems to defy logic, they found that conventional stakeout, often derided as an antiquated approach, gave them the proverbial "foot in the door," leading to subsequent, more advanced work. Today, Ravi boasts an impressive list of clients and high-profile projects, a result of their ability to provide both conventional survey and a host of additional solutions, including digital terrain modeling. Who saw that coming? They did.

Controlled Growth

Established in 1995 by Nagappa "Ravi" Ravindra as a one-person structural engineering firm, Ravi Engineering grew slowly but steadily, adding services which today include construction inspection, surveying, environmental engineering, and geotech engineering. Based out of Rochester, N.Y., the firm employs about 80 people with offices in Albany, Buffalo and Binghamton, N.Y. as well as branches in Allentown and Pittsburgh, PA, according to Mike Bogardus, the company's senior vice president.

"Though Ravi himself might differ, being a licensed surveyor, I'd like to think things started picking up when he added survey to our capabilities," jokes Bogardus. "About five years after founding the company, he contacted a former colleague, Ed Schauber who worked tirelessly to help Ravi get a solid survey presence established. They did so initially by doing design survey for area municipalities, state and county

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Some of Ravi Engineering's key staff members: (from left) Justin Roloson, L.S., project surveyor; Mike Bogardus, L.S., senior vice president; and Joe Paddock, L.S., survey project manager.

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Survey in Rochester, N.Y. is helped by the wide availability of public survey monuments throughout the city. Here, Party Chief, Greg Berl carefully checks in to an existing monument at the Port of Rochester.

DOTs, construction inspection, environmental engineering and so on. That helped them make a name for themselves in that area."

The survey function followed that path for better than a decade, during which time Ravi's team established themselves as a reliable, efficient and detail-oriented survey group. The company, like the rest of the industry, felt the pains of the economic downturn of 2008-2009. However, they survived relatively unscathed and, with a modest resurgence of the construction market over the next few years, saw a way to take survey to the next level.

Pound A Stake In It

A key player in that push to reach the construction sector was Joseph Paddock, L.S., who came on board in 2011 and brought strengths with experience in a range of software products including Civil 3D, MicroStation and InRoads. The team increasingly felt that construction was the growth area they needed to address, and knew the best way to make that happen.

"Having thought a lot about the direction this industry was headed—particularly with regard to machine control—we felt we had to be proactive in establishing ourselves and our strengths," says Paddock. "In the past, I had created point stakeout sheets for contractors. That's a practice in which, working off existing plans, we would lay out the offset stakes and upload an ASCII file to the contractor who could then take his own GPS out to the site and go to those coordinates. Building a model takes that a step further and gives the client much more critical data with which to work."

Throughout this formative time, Paddock was in contact with staff from the Rochester branch of Admar Supply Company, the regional Topcon dealer, to gain additional insight into what they were attempting to do and what equipment would be needed to bring that effort to fruition.

"Evan Spencer and I met with them a number of times to discuss workflows and typical deliverables that would be required," says Rolf Witt, Admar's sales manager. "We invited Joe and Mike to the Topcon Technology Roadshow where they worked with Topcon 3D-MC2 on a dozer and excavator and gained a hands-on understanding of the operator's perspective. We introduced them to customers who would need model-building services and we gave them detailed instructions on the software and deliverables that the contractors deal with daily."

That back and forth, says Paddock, has developed into a nice working relationship between the two companies and strengthened their GPS capabilities. Today the company owns several Topcon HiPer-V base/rover systems, as well as PS-103 total stations.

Impressive Results

Using conventional stakeout as their "in" paid quick and impressive dividends. Paddock says their first eight months doing so netted Ravi a significant increase in new projects and clients. They were very pleased with the direction they were headed.

"The following year, my colleagues were betting me that we could double the number of our clients and I doubted them," says Paddock. "But sure enough, the next twelve-month period resulted in growth to meet that projection. We knew we were definitely on to something."

One of the key moves Ravi Engineering took to help launch their DTM initiative included bringing Justin Roloson, L.S., on board. Already skilled at constructing models and stakeout from a previous employer, Roloson, quickly gave that effort the shot it needed. He says that using modeling for projects other than machine control might, at first glance, seem like overkill, but that is not really the case at all.

"Five or ten years ago, that might have been the case—today it isn't. Consider a situation in which a contractor has us come out and says: 'I need that center line of pavement.' So we give him a stake to the centerline. But we later find out that their ultimate goal for that centerline was to construct a transition lane. With a model loaded into his dozer or grader, they could easily do that transition lane or a breakdown lane or whatever. We like to say that, you might have a line here and a line there, but there is still a lot of info going on in between those two. We are providing access to that information with a model."

Speaks Volumes

Paddock adds that because both conventional stakeout and model building involve an initial up-front topo effort, they are using that to their benefit in meeting their clients' volume calculation needs. It's a capability that they hadn't foreseen.

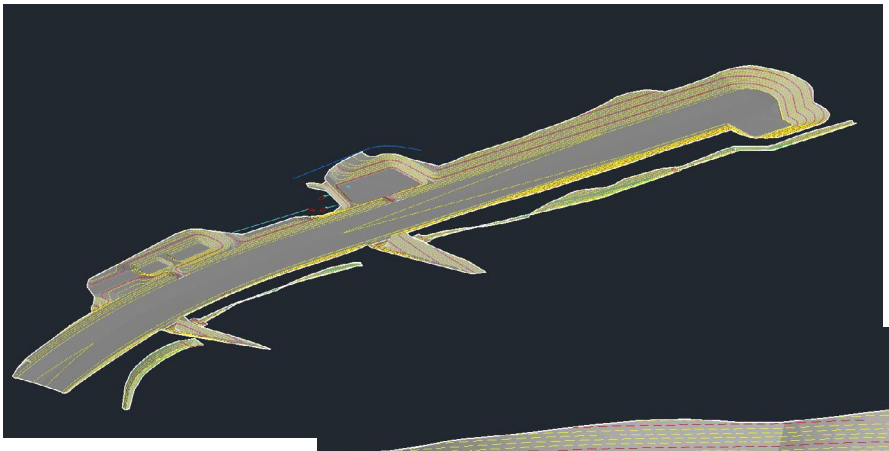
"In today's business, almost all payment to the contractor is being done based on volume calculations," he says. "As a QA/QC procedure for many of our clients, we do an up-front topo, turn that into a model, and then model the proposed info and check volumes for them. That's been a huge growth area for us and the clients have a volume calculation that is far more accurate than they could have gotten themselves. It's really a win-win for everyone."

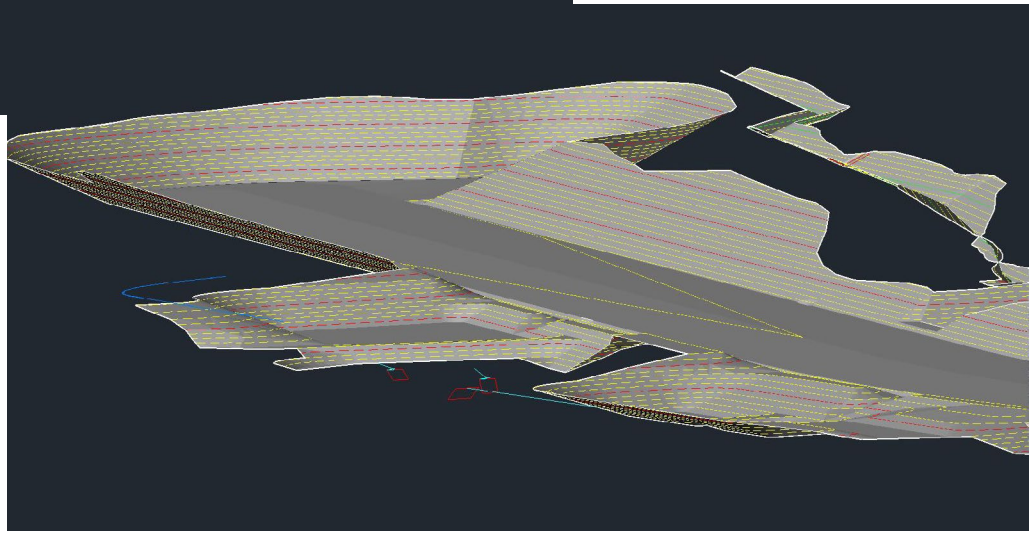
Small-scale Success

Perhaps the biggest surprise for Ravi's team since taking on the push toward modeling sites has been the fact that it is not, as generally thought by many, limited to larger-scale projects.

"A common misconception is that only a big project can make an effort like this worthwhile," says Roloson. "But we've built models for contractors doing Dollar General stores, Advanced Auto stores, Dairy Queen stores—all small sites—and it's worked out really well. We know we are giving up survey time on site, but we feel we can more than make up that by being more productive. We can have that surveyor in the office creating two DTMs in the same time he would have spent at the site."

From the customer's perspective the DTM brings a host of benefits, he adds, including the ability to do features like swales and basins themselves (the first time), a reduction in man hours and—by nature of fewer people on site—an increase in safety. He feels that the level of service





Above: A general overview of a model generated by Ravi Engineering. Contours for the project—a proposed railroad siding/storage facility—are indicated by the yellow and red lines; the other colors indicate site features, such as break lines, utilities etc.

Right: An alternative view of that same project view looking from the west at a lower angle. Being able to view the model in this way enhances Ravi's QA/QC when modeling.

Ravi's Party Chief, Greg Berl, sets up a Topcon HiPer Ga base station prior to site localization for a Port of Rochester Marina development project.

they give their clients through the DTM separates them from others as well.

"Our clients respect the fact that we do a lot more than simply take a CAD plan and convert it," says Roloson. "We QA/QC the heck out of it, we re-draw features, we do what it takes to ensure that the resultant model provides the most benefit to the customer."

Paddock adds that the term "model building," for them, can mean a number of things. Of course in its most basic sense, DTMs are provided to the contractors for use with automated machine guidance systems.

"But, in many cases, contractors use the model in the field along with their own base and rover," he says. "That allows them to just walk along and know where they are and stake as necessary. This year, we've also started to set up models for our in-house stakeout guys and hope to one day build a model for every one of our construction jobs. As far as construction services goes, we are currently modeling for about one-quarter of our projects and in a year or so that number could possibly be one-half. The growth, particularly in the small project segment, has been impressive."

Making The Team

Both Paddock and Bogardus say that emphasizing Ravi Engineering's value and potential in the contractor's overall effort has proven highly successful for the customer and Ravi alike.

"We have great relationships with a large number of contractors and both they and we recognize that they can't always get everything done themselves," says Paddock. "So we will often team with them on the work they are doing, whether that is setting monumentation, verifying control, staking, etc. In fact, we have a long list of clients who use us just for that. But in many other cases, a client will hire us for a conventional stakeout, then expand our services to include building a model and other related work on the project. In doing so, the contractor sees us as a valued part of his team. Ravi Engineering's relationship with Admar Supply and its Topcon line of solutions has continued to develop along with the growth of their survey function.

"Now, if we are in the field and one of our clients expresses an interest in machine control, we send them right to Evan Spencer at Admar," says Paddock. "They've has been a great support to us as we've transitioned into this area; it's really worked out well."

He adds that the rapid growth of technology, and the accompanying demands from contractors for services like DTM work, can actually bode well for survey firms. "I think that any survey company, by getting in on the conventional side of things with the contractor and then expanding their offering can make decent headway in securing their position. We're proving that every day here at Ravi." ■

Larry Trojak is a communications writer for his own firm, Trojak Communications, in the town of Ham Lake, Minnesota. He is a frequent contributor to *The American Surveyor.*

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