

from service station to reference station

Alabama Surveying Firm's CORS Installation is 'Cooler' than Most



Polysurveying needed a site with round-the-clock access for its new CORS. Bill Benton's Chevron station provided a perfect niche.

Facing a steadily-growing workload of elevation certificates for Alabama homeowners looking to rebuild after the ravages of Hurricane Katrina, officials at Polysurveying of Mobile decided that setting up the company's own Continually Operating Reference Station (CORS) could improve its overall efficiencies and allow

them to better meet that increased load. The area's heavily wooded location proved less-than-ideal, however, and required an alternative solution. As it turned out, Polysurveying's solution resulted in what is perhaps the most unique CORS location in the state, if not the entire country, and is now better able to help Katrina victims rebuild their homes and their lives.

>> By Larry Trojak



Polysurveying designed the antenna and mounting bracket and had it fabricated locally. The antenna mounting was done in accordance with NGS specs to make it acceptable as part of the national CORS network.



High and dry: Polysurveying chose an area adjacent to the store's cooler as the best place for the CORS equipment. Finding a cabinet to house it all was as simple as a trip to the nearest Home Depot.



Streamlining their operation with the addition of CORS has allowed Polysurveying to grow other parts of its business—like the topographic survey being performed here.

Meeting Coastal Needs

Started in 1975, Polysurveying is today a family-run company of about 45 employees with diverse surveying strengths including engineering surveys, topographic surveys, and a good deal of ALTA-standard boundary surveys. Working throughout Mobile and Baldwin counties, the firm also conducts work for elevation certificates, a function that has, of late, grown both in importance and demand, says Matt Orrell, Polysurveying's vice president and son of founder Sidney Orrell.

"Being in a coastal zone, there is always a need for that type of work," he says. "Flooding is an ever-present concern, so coastal homes are built on pilings to withstand storm surges, and we ensure that the desired elevations are correct and in accordance with FEMA and/or local specs. Ever since the real recovery from Katrina started, the demand for elevation certificates has skyrocketed. We felt that, in order to meet everyone's needs and improve our surveying function in other areas as well, the method by which those elevations were verified would have to be streamlined."

Polysurveying was already a dedicated proponent of GPS technology in its

surveying function, starting out with static GPS systems nearly a dozen years ago and transitioning into an RTK capability five years ago. They believed that having access to data from a local CORS could improve their performance and efficiency even further. Often, however, the simplest solutions are anything but.

No Time for Red Tape

While many regions benefit from an overabundance of available CORS from which to draw data, the Mobile area is not one of them. According to Orrell, as recently as earlier this year, the state had talked about beefing up its CORS network by channeling some state funds to establish several new sites.

"Ordinarily that would be good news to someone like us," he says. "But one of the first locations they selected was on Dauphin Island, which is in the Gulf about five miles south of the southernmost tip of downtown Mobile. While it was nice to see *anything* being considered, we knew that half the range of that location would be wasted out into the water. We also had our doubts as to how soon it could be operational."

With no apparent help from the state forthcoming, Orrell and his team decided to take matters into their own hands. It

is at that point that Polysurveying's saga took a detour off the beaten path.

Can't See the CORS for the Trees

Having decided to establish their own CORS, Orrell contacted Roger Wheeler at Hayes Instrument Co., the Shelbyville, Tennessee Topcon dealer with whom they'd been dealing for years. The obvious location for the station, their office site, was so heavily wooded that signal degradation would have been inevitable.

"Of course we had the option to remove all the trees to improve transmission strength," says Orrell. "But these are one hundred-year-old trees, so that never really came into play—we needed to look elsewhere. A nearby bank was our first thought, based on their location and our relationship with them. But we would need all-hours access to the CORS and the security measures at the bank just wouldn't allow us that freedom."

Orrell's second choice proved a stroke of genius: a full-service convenience store located about less than a quarter mile from their offices. Orrell says he and his crews have been regular customers of the store for years, had a good relationship with the owner, and it offered 24-hour

CORS in a cabinet: Polysurveying's Matt Orrell alongside the completed installation. Everything, including the Topcon Odyssey RS GPS+ receiver, router and laptop, is secure, climate-controlled and accessible.

access to a clean, dry interior location for the equipment.

"The store is called Bill Benton's Chevron," says Orrell, "and for the last 15 years I've had anywhere from eight to 11 crews—each with a couple trucks—stopping by there almost daily to gas up. Bill was more than happy to help me out and we were thrilled to have the site we needed."

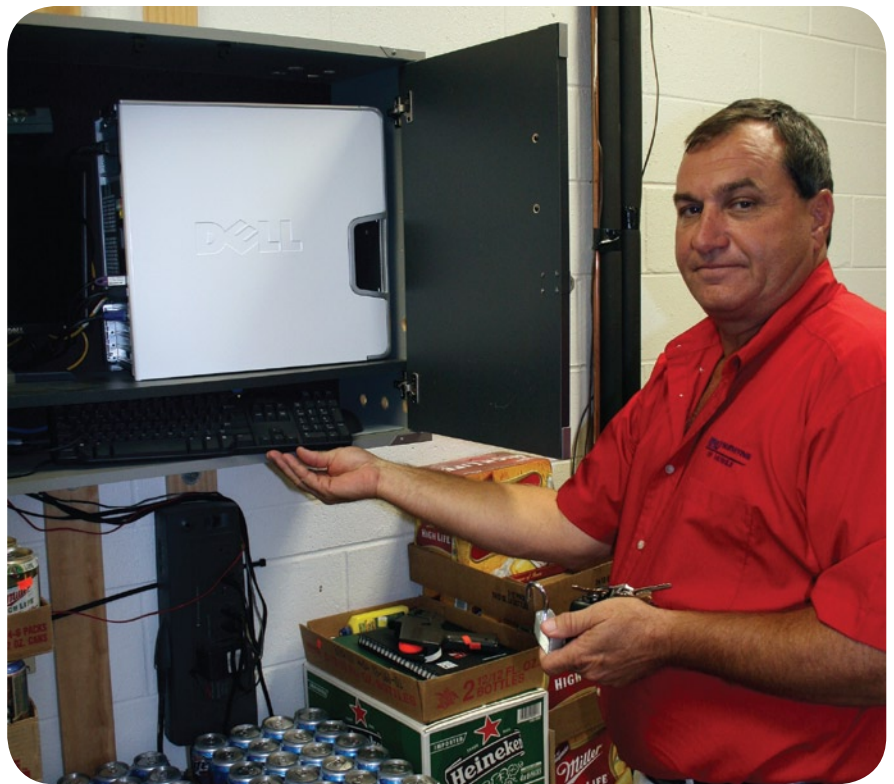
Point of Reference Established

The reference station installation process could not have gone more smoothly, thanks to a cooperative effort between the key people at Polysurveying, Topcon's service representative Joe Frost, and Hayes Instrument's GPS Support Manager, Daniel Shearon.

"Polysurveying's people designed the antenna and mounting bracket themselves and had someone fabricate it locally," says Shearon. "The antenna mounting was done in accordance with NGS specs and guidelines to make it acceptable as part of the CORS network. On the inside, we chose an area adjacent to the store's cooler as the best location for the Topcon Odyssey-RS GPS+ receiver, laptop, router, etc. It was funny to think that we had a piece of equipment capable of receiving signals from dozens of satellites, yet when we needed something in which to house it, Matt went across the street to a Home Depot, bought a standard cabinet, and drilled ventilation holes in it."

With the hardware in place, all that was left was for Shearon to establish the DSL connection that would allow the CORS to wirelessly connect to Polysurveying's office. It was the only bump in the road—albeit a small one—the team hit throughout the installation.

"Trying to get someone at the phone company to get a grasp of what we were trying to do was challenging, to say the least," he says. "At times I felt it was like trying to explain geometry to a cat. In their defense, they'd probably never run into a situation like this before: one in which someone calls saying they need an open, public, static IP address. Fortunately for us, after talking with a steady parade of changing technicians, we got a gal on the line who knew



exactly what we wanted and made it happen for us. With that in place, we had the connection established and data was finally flowing to their office."

Helping Shape the Future

Polysurveying's CORS went from a mere concept to fully operational in less than six months and has been functioning flawlessly since the install. According to Matt Orrell, the station has streamlined the elevation certification process as well as their other survey functions.

"When we do an elevation certificate, we still check-in to a local government monument for verification. In the past, however, we would have come off that monument with a reciprocal level and had two people running the loop between the monument and the new location. Now we simply check-in to a verifiable monument, take one of our Topcon rover GPS units to the house site and, running data through the CORS, nail the elevation; we've eliminated having to manually run that elevation between the monument and the home site."

He adds that, using the previous method, each elevation certification process could easily take three hours to complete; today they do it in an hour or less. That increase in efficiency has allowed Polysurveying to perform, in addition to its regular boundary survey work, more than 2,000 such certificates in the nearly three years since Katrina.

Says Orrell, "When people have all their financing in place and are ready to begin rebuilding their lives, they don't want the whole process held up for weeks because of a surveyor. We can do these now in a timely manner. They can contact us, let us know what they need and, in a couple of days, be cleared to build."

The process has been so streamlined that one person can now go out and complete five elevation certificates in one shift. In the past they were lucky to get two certificates a day using two people.

"That improvement is really important to us. Even though it probably didn't get the news coverage around the country, we were hit hard by Katrina in this area. South Mobile County faced a storm surge of 20 feet—as bad as anything in south Mississippi—and still has a couple thousand people living in FEMA trailers. By being more effective at what we do, we can grow our business, do things faster and more effectively and, at the same time, help contribute to making life better for people in the area—all with the help of equipment locked in a cabinet next to a beer cooler. We couldn't be happier with the way things have worked out." *A*

Larry Trojak is a communications writer for his own firm, Trojak Communications of Ham Lake, Minnesota. He is a frequent contributor to construction and survey magazines.