

A Thirst for Knowledge

Clayton Signor is following his passion for pile driving by presenting its benefits around the country

By Clayton Signor

Four years ago I was finishing up a house in Colorado and on the verge of moving back to Austin, Texas to focus on our family pile driving business, TX Pile, LLC. While driving to our office from the airport on a week-long visit, my mother and I stopped by a new construction site along the Lower Colorado River to see if the contractors would be interested in using driven piles instead of the drilled shaft cages they had stacked onsite. The superintendent scratched his head and looked a little confused because driven piles were rarely used in Austin besides residential jobs our company had performed. He said it was a little late for any engineering changes and sent me on my way. From that experience, I learned that if we wanted to get pile driving in the area, we had to educate the local geotechnical and structural engineers on how to design and specify them. But before I could teach these engineers about the benefits of driven piles, I had to learn as much as possible because neither of my degrees in Civil Engineering nor Construction Management from Vanderbilt University gave me much, if any, exposure to pile driving. However, I had been working on our rigs during the summers of high school and college and going to PDCA annual conferences since I was a sophomore in college, so I had a place to start.

I found a couple of presentations on the PDCA website that gave basic information on how “A Driven Pile is a Tested Pile™” and the benefits of driven piles. The benefits presentation ended up being the easiest to use and add to my father’s “war stories” of our local experience over the past two decades. The first few presentations were awkward because of my unfamiliarity of the information. To help with that, I read everything that I could find on pile driving on the Internet, various foundation engineering textbooks and PDCA conference articles. The more I learned, the more questions I had about pile driving, so I signed up for every PDCA conference and some classes like the American Society of Civil Engineers’ (ASCE) Deep Foundation: Design, Construction and Quality Control, dynamic pile testing mini-session and the PDA workshop. These classes helped clarify some of the geotechnical and pile driving jargon out there so I could explain to engineers why pile

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— CLAYTON SIGNOR, TX PILE, LLC





Signor at a PDCA Golf Tournament

driving is the best deep foundation in most cases. In the first year of presenting, my father and I went to nearly 30 engineering firms, association meetings and university classrooms. Along with those presentations, we set up a PDA demonstration in expansive clay and organized a pile type seminar with representatives from concrete, timber and steel pile suppliers.

My thirst to learn about pile driving and geotechnical engineering was so much that I ended up applying and being accepted to the Geotechnical Engineering Program at the University of Texas in Austin. Before I started the program, I knew that there was some "black magic" associated with geotechnical engineering. This was confirmed by the thorough description of all the different types of soil properties, how they are determined through field exploration and laboratory tests and how they are incorporated into design. I learned that only one billionth of material of a site is tested, so statistics and past experience play the greatest role in geotechnical engineering. "It depends" was a common phrase and introducing water to a soil model always made conditions exponentially worse. Now I understand the need for soil exploration and why a driven pile is the highest form of quality control for a deep foundation.

In those two years, I was challenged more than any other time in my life by working full-time, taking two classes per semester and completing my thesis, "Driven Piles in Central Texas Expansive Soil." That thesis was the collection of four case histories in which dynamic pile testing was performed. The main goal was to explain that driven piles could be effectively



Signor and his dog, Rose, enjoying the outdoors in Hamilton, Texas

used as an alternative to drilled shafts through reported average unit skin friction values and rate of soil set up. The missing piece of the puzzle in designing for driven piles in expansive soil is the magnitude of uplift forces from swelling and the reduction of skin friction from shrinkage. That is why in the next few years, I would like to organize fully instrumented pile tests in expansive soils and observe how the soil and pile interact below ground over at least two years.

It has been quite a journey in understanding pile driving over the past four years, but without the help of my family business and PDCA, I do not think I could have made it where I am today. ▼

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