

Piling Ahead – How involving contractors early could save your project

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When Air Products Canada Limited had to engineer a solution for the foundation piles on their Hydrogen facility in Fort Saskatchewan, the soft, sandy sub-surface soil conditions on site created a big challenge for the design team. With the proposed start date for piling getting closer and potentially forcing them to start behind schedule, they were tasked with finding the money and the resources to produce 925 Belled Cast-in-Place (CIP) piles – a daunting project for any company. Feeling the pressure of a complicated job, specialist sub-contractor Keller Canada was recommended to them as a resource. While Air Products wasn't sure how their plan could change, involving Keller Canada in the early design stage provided surprising results.

Looking deeper at the problem

A deep understanding of the soil conditions was integral to finding the right solution for the job. With problematic sub-surface soil, Air Products knew they needed an alternate solution to prevent their piles from collapsing inward. The original Belled CIP pile design required a significant amount of temporary casing to control the difficult strata on site, introducing big costs and potential schedule delays. Though Air Products believed that large amounts of time and effort would be needed to finish the job, Keller Canada was interested to see if there was an easier way.

Keller Canada Senior Project Manager Matt Ramsden, along with Project Manager Barry Evans and Superintendent Dwight Hebert, all have significant experience with Continuous Flight Auger (CFA) piling in difficult soils, and knew this technology had the potential to be a massive time and money saver for the project. By collaborating with Air Products' engineers, they looked deeper into the feasibility of CFA piling on site by installing test piles to confirm their design criteria.

Performing a test pile program with geotechnical engineers allowed the team to gain valuable insight into the geotechnical performance of the subsurface soils, and they were able to validate their design recommendations for its conditions. Along with the fact that CFA piles would perform just as well as Belled CIP piles, they had the added attractive benefits of dramatically reducing costs and saving precious schedule time.

As an additional benefit, Air Products' initial estimation for on time completion of Belled CIP piles required 14 rigs, which was drastically revised down to only two rigs by Keller Canada for CFA pile installation. Though Air Products was initially unsure if two rigs could complete the CFA piles under a tight deadline relationship they had developed with Keller Canada meant they trusted them enough to give their plan a shot.

Collaborating as a recipe for success

Looking back on the project, it's easy to see that its success hinged on the collaborative partnership of Air Products and Keller Canada. Upon meeting Air Products, Barry Evans describes his initial impression:

"Ground engineering is a risk game; you never know what will happen on a project until you start, so sometimes it's tough to manage a client's expectations. [With Air Products], it was as if we'd worked together before. It was seamless."

The Keller Canada project team maintains that much of the success of their working relationship stemmed from the openness of Air Products to collaborate with them early on in the process, allowing them to revise their initial plan. Trusting Keller Canada to work with them on plans before the project even started ultimately boosted productivity while giving Air Products the best bang for their buck.



Despite this project's success, it's unusual for owners to engage early with contractors, and they tend to be brought on once the project design is already underway. Matt Ramsden explains the issues that can arise from being involved on a project once the design process has already begun:

"It's not typical to be engaged so early during the foundation design stage – projects are usually a long way into the design process or even at final IFC design before we are involved. At that point, quite often the substructure is already designed and [the

client] isn't willing to change it. We always welcome being involved at the early stages of foundation design when we get the opportunity."

Saving more than just headaches

Ultimately, the success of their early partnership came through in the results. While the initial start date for piling commencement was one month behind before Keller Canada was involved, two rigs, Soilmecc SR90 and Soilmecc R625, completed 925 CFA piles ahead of a planned 10-week program. All together, the project was completed in just over eight weeks. Bill Elkins, project superintendent for Air Products Canada Limited, speaks to the financial savings of the project:

"With Air Products selecting CFA piles, we were able to see a cost reduction of at least 30 per cent related to our originally planned cast in place augured bell pile design."

Along with saving a significant portion of their budget, Elkins and Air Products are also aware of the benefits of bringing in Keller Canada early during the engineering and design phase:

"Keller Canada assisted in the engineering and design of the CFA piling on our site. This resulted in a smooth execution from design to construction and an early delivery of contract work to the overall schedule."

According to recent industry studies, a large portion of all major industrial projects end up significantly over budget and over schedule. For Canada to attract capital and convince owners to build their industrial projects here, owners, engineers, and contractors have the potential to benefit greatly from adopting this collaborative method of project delivery.

With a little foresight into the design process, owners can enable innovation, optimize design, reduce costs, and control schedules, improving overall project execution. They say an ounce of prevention is worth a pound of cure, and in this case, the small step of getting a capable contractor engaged early allowed a company to capitalize on innovation and recognize significant cost savings, effectively mitigating any problems along the way.

About Keller Canada

Backed by the largest independent ground engineering company in the world, Keller Canada prides itself in being able to provide full-service geotechnical solutions for any job, no matter what challenges get in the way. Formerly North American Caisson Ltd., a division of North American Construction Group, Keller Canada was acquired by U.K.-based company Keller Group Plc. in 2013, though their management and operations remain the same. With over 30 years of experience piling in Canada's soil, Keller Canada provides safe, high-quality solutions with hands on experience in all climates, project environments, and soil conditions.