

A DIFFERENT KIND OF HAWAIIAN ADVENTURE

MOLE•MASTER TELLS OF ITS TRAVELS TO HAWAII TO CLEAN OUT EIGHT SILOS FOR HAWAIIAN CEMENT.

Many dream of travelling to Hawaii for a relaxing vacation. For the more adventurous, it is the more rustic, less bustling environs away from the shops and beaches of Honolulu that appeal.

In 2011, a team of silo cleanout specialists from Mole•Master Services Corporation travelled to Hawaii. However, this trip was all business.

As Project Coordinator Michael Bailey notes, although Mole•Master has experience handling silo cleanout projects in over 33 countries, it is unusual for the Ohio-based company to travel halfway around the world to handle a challenging project that is still technically in the United States.

The situation at Hawaiian Cement in Aiea represented such a challenge. The company had an 8-pack bank of silos that used to be the finished product silos for a plant that had previously been torn down. All eight silos were 50 years old or more and the roofs had been leaking for at least the last 10 years. The company had decided that it wanted to do what was necessary to clean out the caked cement, which had turned into concrete and had thus rendered the silos useless. The search began for a company that could manage what was sure to be a tough job.

Jim Gomes, Cement Division General Manager at Hawaiian Cement, was charged with the assignment to find a company that could handle the project. After carrying out a considerable amount of research, several companies

were invited to tour the facility in order to gain a complete understanding of the assignment. After the visits had taken place and all of the companies had submitted quotes, Hawaiian Cement selected Mole•Master.

"After Mole•Master completed their visit and submitted their proposal, we were intrigued with the experience and realistic approach that they brought to solving our problem. Our final step was to contact a number of their customers to talk to them about their experience using Mole•Master. The reviews convinced us that we had the right guys. In the end, their plan, their technology and their communication skills were heads and tails above any other folks we talked to," said Gomes.

Now that Mole•Master had been contracted to handle the project, the real work began. Given the location, logistics would play a key role. How best could Mole•Master have its crew onsite at the same time that its equipment would arrive? What would be the best way to ship the equipment to ensure that the crew had everything at their disposal that they would have if they were working on a project in the lower 48? How would the crew communicate with headquarters in Marietta, Ohio, accounting for the six hour time difference? These were all of the problems facing Mole•Master General Manager Dave Laing.

"We had to think creatively on this one," Laing said. "Even though this was technically a domestic project, we approached it as we would an international project. To that end, we purchased and outfitted a special 20-foot shipping container that would essentially replicate exactly what we include in our service trailers. This was necessary so that the crew would feel comfortable that all of the equipment, tools and technology that they were used to having close at hand would be available at this project site as well. This meant our team was basically self-contained and did not have to bother the customer for things that they needed or did not have immediately available."

While the equipment container was en route, Mole•Master sent Senior Supervisor Phil Proctor to Hawaiian Cement to head up the project team. Proctor was to start work right away, prior to the bulk of the equipment arriving. To facilitate time savings, Mole•Master crated up one of its new Hydraulic Junior 360° whip machines and air freighted it to the job site. This way, Proctor could start attacking the problem immediately while the rest of the equipment was in transit. Knowing when the container would arrive, Mole•Master coordinated the arrival of two other crew members who would assist Proctor in cleaning the silos. Proctor commented, "This project gave us a great opportunity to test our brand new Hydraulic Junior 360°." The hydraulic cutting head on the Junior 360° is significantly smaller in diameter than others on the market. This meant that it could be used in small crevices, or where there was an extremely small flow channel where larger equipment simply would not fit. The 5 in. diameter cutting head combined with an 850 rpm motor and 350 lb torque provided Proctor with enough power to begin work on the project.

One of the issues Mole•Master discovered during its initial visit was that the holes in the roofs of the silos had already been repaired by Hawaiian Cement. As a result, Mole•Master had to work with the existing openings in the roof. Unfortunately, the primary opening measured 18 in. x 18 in. and the equipment that Mole•Master had planned to use was designed to work in a minimum



Silo full of hardened cement prior to cleanout.



Rock hard cement removed from silo to facilitate flow.



Ocean container outfitted for service.

20 in. x 20 in. opening. To overcome this problem, Mole•Master came up with an equipment design modification so that the Junior 360° would fit into the smaller opening and yet still rotate 360°. This design improvement was so successful that Mole•Master formally redesigned the equipment so that all future Junior 360° whip products sold or rented will accommodate a smaller opening than the original design.



Exposed silo cone after cleanout started with JR360H.



Four of the eight pack of silos that were serviced. Yellow lifting beam used to lift MMSC equipment to top of silos.



View from the top of the bank of silos.

While the new equipment proved to be helpful, the sheer scope of this project was going to require more – much more. Dave Laing commented, “This project stretched out over 76 days and required 679 man hours to complete. We had various members of the team on multiple silos each day using our Junior 360° whip machine and our ArchMaster™ Portable Auger System. The Junior 360° was used primarily to clean out the first two silos and for spot cleaning on the others. Our proprietary Big Mole™ System, which is designed for high degree of difficulty projects, was used for removing the heaviest build-up. The Big Mole™ System works very well on projects like those found in cement and other industrial plants. Our 25 plus years cleaning silos has taught us to never rely on only one method or tool to get the job done. Whether we mobilise with trucks and trailers or, in this case, a seaworthy container, we never show up without multiple cleanout options.”

The potential danger on the project was great. This is where the extensive safety training that all Mole•Master technicians complete paid dividends. Proctor recalled, “The job required a lot of jack-hammering, poking and prodding. There were times we were standing on scaffolding 15 ft. off the ground while the cement flowed out. As we have learned over the last 25 years, fluidised cement flows with tremendous force when it is coming out of 8 – 12 in. holes around the cone. I remember that Jim Gomes was quite surprised that we were able to salvage this much cement. He thought it was all hardened based on what he could see from the top. It was actually our Big Mole™ equipment that undermined the bulk of the material in the last silos and caused it to fall.”

Communication both inside and outside the silos was critical. The person loading the truck would communicate when to close the gate and stop hammering while he unplugged the basket in the top of the truck.

Hawaiian Cement’s Jim Gomes noted, “We didn’t make the job any easier for them. Shortly after Mole•Master started the work, we discovered there was good flowable cement in various locations of the silos. We recognised that if they could free up some of that material, the savings realised by being able to sell material that we had previously assumed was no good would go a long way toward paying for the cost of the cleaning. And that is exactly what happened.”

The discovery of the material that could be salvaged represented ‘found money’ in this case, but the time involved to save that material increased both the time and level of difficulty required to complete the project. Mole•Master could not simply go in and clean the silos in the usual manner because every time that flowable material was found, the job had to be halted while the material was forced down through screws so that it could be reused. This ‘stop and start’ meant the project took longer than initially estimated but Hawaiian Cement was very satisfied with the successful outcome of a very challenging project.

The initial project goal was to get eight silos back into full use in order to accommodate future growth. The end result was exactly that: eight silos back into service and the ability to salvage a significant amount of material that could be sold and, therefore, help defray the cost of the cleaning project. 🌐

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