Finding efficiency in task reduction

Dayle Widdup reviews the trial and discovery process recently undertaken by Broadspectrum to evaluate Romold plastic manhole chambers

The need to remain competitive in the field of infrastructure development requires that an effective company considers all avenues of reducing operational costs. Matching project size to machinery and resource capabilities, as well as planning complementary workflows are typical approaches used to attain operational efficiency. What must not be overlooked is the efficiency that can be gained within a process, and how this can be improved by removing tasks whilst achieving the same deliverable.

THE OPPORTUNITY

During stage 2 of the Totara Parklands development in Whangarei, Broadspectrum ran a trial and discovery process on the Romold plastic manhole chamber for the reticulated wastewater services. At five percent of the weight of an equivalent concrete chamber, plastic chambers have the ability to greatly improve the speed and safety of handling around a site. The features moulded into the Romold products offer further benefits, and it was the attractiveness of this feature set that first caught the attention of Broadspectrum.

The goal of the trial was to determine if tangible process time savings could be attained by utilising a product with a strong integrated feature set.

THE PRODUCT

Made in Germany, Romold's polypropylene manhole chambers are manufactured using an injection moulding process. This is a very accurate moulding process which allows features

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that facilitate the installation processes to be formed into the product. The chambers are modular, pre-benched, have integrated rubber ring jointed pipe connection sockets, and even come with a durable glass-filled polypropylene ladder installed. These details remove many of the processes that consume time on site, and all show a consistent quality that can only be attained in a production manufacturing environment.

Five chambers in total were installed on a DN150 line. A DN625 maintenance chamber was used at the end of the line as this was a shallow chamber intended solely for house connections. This chamber enabled the reduction of total materials cost due to it being significantly cheaper than a full manhole chamber. Being a single component pre-benched chamber it again helped reduce installation tasks.

COUNCIL ENGAGEMENT

It is important to understand that plastic chambers are not direct replicas of concrete chambers; there are some subtle differences in their design. With this in mind, engaging with Council throughout the trial was highlighted early as a key requirement.

Support for the trial was provided by Andrew Carvell, the Waste and Drainage Manager at Whangarei District Council. He has experience with the effects that corrosive environments can have on concrete chambers so has an awareness of the potential benefits provided by plastic. The trial therefore provided a learning opportunity for them also. Council representatives were present during the on-site training and later during installation to maintain contact with the project. This engagement allowed potential issues to be addressed early and enabled the install to run smoothly.

THE BENEFITS

Whilst the first chamber installed was never expected to be the quickest, it was possible to learn very quickly that tangible time savings can be attained. Reducing the requirement for labour intensive haunching of the invert channel or when putting pipe starters in was a key benefit. With this detail moulded into the product, the installation process was greatly simplified, involving simply bedding the chamber base, connecting the pipes at the sockets, and then building the product up. Having effective seals between each of the modular elements gave confidence that the end result would be fully sealed and would require no post assembly patchwork to correct for leaks. There was a bit of time required to compact backfill around the chamber but this was a small trade-off in comparison to the typical manual labour required for a concrete chamber.

With a three-man team, the wastewater line with five chambers was able to be laid in five days. It worked out that a plastic chamber could be installed in one third of the time that it takes with concrete, a labour savings that can then be applied to the next project.

When considering a shift from traditional processes it was important to ensure that all members of the team could see the benefits. In this case the team enjoyed working with the technology, finding it intuitive and easy to work with.

One significant advantage was that the modular chamber was complete as soon as it was assembled, meaning that the need for confined space entry was reduced. This is considered to be one of the highest risks to work site safety, so avoiding it offers a real benefit.

CONCLUSION

Whilst the benefits of task reduction provided by plastic manhole chambers were initially easily understood, it was only with hands-on experience that the value to our operations could be evaluated. In this case, the positive experience and tangible labour savings will justify future applications, and we intend it to act as a catalyst to inspire further streamlining of our process as familiarity is attained. **WNZ**