INNOVATION, SUSTAINABILITY + DIGITAL IN PRACTICE

ISDIP

ISDIP 069	Custom screed for tank floor
Date	November 2024
Business Unit	Brian Perry Civil
Project & Region	Waikanae Water Treatment plant upgrade. Southern Region
ISC Themes	• Using Resources • Emissions, Pollution and Waste • Innovation •

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1 What Happened?

The BPC team at the Waikanae water treatment plant is enhancing the facility's seismic resilience. The project involves constructing a water clarifier tank, a rapid mix tank, and comprehensive mechanical upgrades to the existing plant. During the construction of the clarifier tank, the team brainstormed ideas on how to complete the concrete placement for the 360m² tank floor to strict level tolerances and a U4 finish, all within the six-hour time limit imposed by the specifications.

2 What Are We Doing Differently?

The team developed an innovative system to ensure the clarifier tanks' base maintains dimensional tolerance. While vibrating screeds are fairly common, the team's solution is tailored to accommodate the size and complexity of their operation. The clarifier base spans 25 meters in diameter and slopes toward the centre. They engineered a custom vibrating screed with stage scaffolding to maintain rigidity across the large radius. Vibrating motors were installed along its length to aid in levelling the surface. Additionally, they devised a unique pivot system, allowing the screed to rotate around the centre point of the structure. This setup was supported at the outer edge by a custom trolley, which allowed the site to rotate the screed, and adjust the height to ensure precise levelling of the concrete.

Dan Doyle, Project Manager, commented, “It was certainly a good innovation from the team and proved to be successful on the day. Vibrating screeds are quite common; we simply made our version to fit our site. Due to the complexity of the pour, local concrete placing companies were not willing to complete the work. By utilising the screed, it allowed the BPC site team to self-perform the works with no issues.”

After the pouring and screeding, standard finishing techniques were applied to maintain the surface quality and grade. This custom screed saved the team considerable time and labour by eliminating the need for concrete workers to manually screed while standing in the pour.

The team plans to apply the lessons learned from this pour to future large-diameter tank base pours.

The unique vibrating screed in operation

The screed follows the placement of concrete and allows for the finishing teams.

3 More Information

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