

SWW Pure Award - Innovation

Background

During a routine inspection of the contact tank at Northcombe WTW, a major defect was identified in a wall that separates the addition of lime for final pH correction.

The design team consisting of Bob Keast, Dave Hollyoak and Michael Orchard, were presented with the nearly impossible task of removing the existing wall, and replacing it within a 3 week window.

Removal of the existing block-work wall and making good the floor, was scheduled to take 2 weeks, as all of the blocks had to be removed by hand, and hoisted up through the single opening. It became clear immediately that reconstruction in block-work would take too long.

With Hydrok's experience of working in stainless steel, an initial design of stainless steel posts and plates, was proposed. However after details and weights had been calculated, this also would prove to be difficult and potentially dangerous to install.

Michael, then came back with the innovation of using stainless steel sheets cut and folded, with gives strength, and lightness, this innovative design also removed the need for posts, which would have been large and heavy. Everyone of these panels had to lowered through the single opening and carried into place, with these panels only weighing 42Kg, it further allowed the construction to take place from simple tower scaffolding, and not full scaffolding, which would have added to the cost and more importantly the time to complete the work.

Problem

How to rebuild a series of walls in a tank that is 5.5 m high by 24.68m long.

The tank is 5.5 m deep, with only one opening which is 1m x 1m, and the work must be completed as soon as possible.

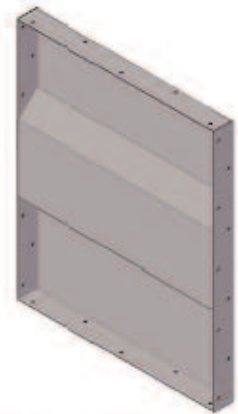
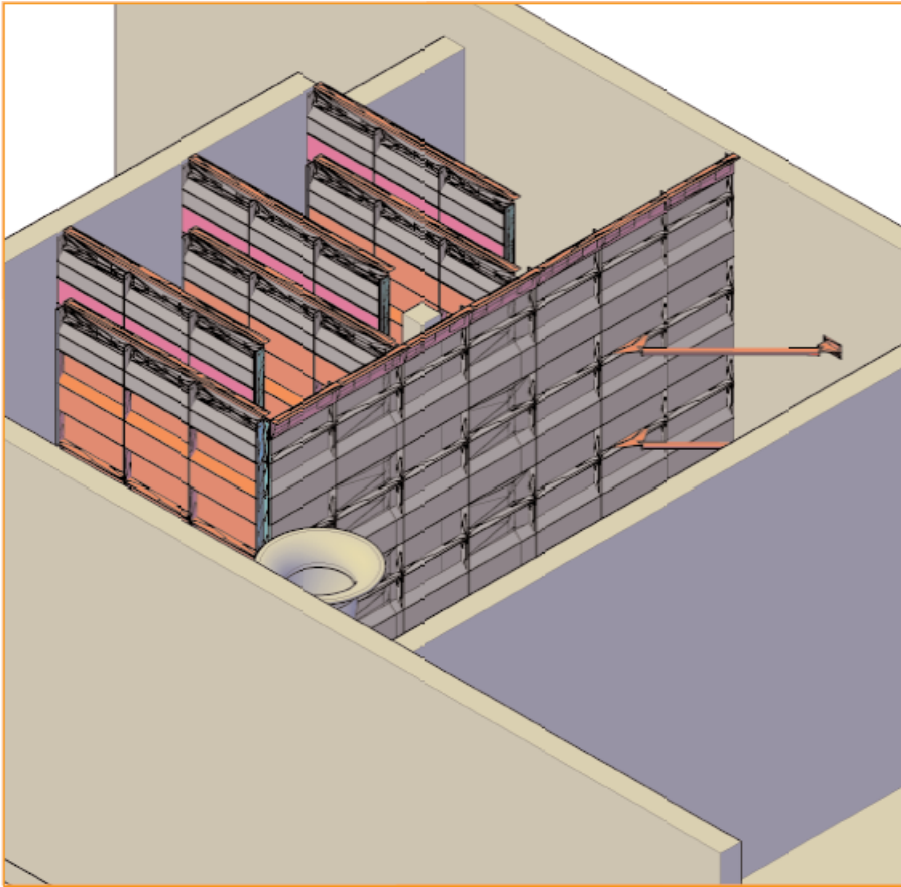
Answer

Construct it in stainless steel panels, each one 1.2m x 1m each of which weigh 42Kg so they can be manhandled into place

Innovation

Due to the restricted opening and the need to manhandle the panels, and the need to construct the walls in as short a time as possible, and in compliance with Drinking Water Inspectorate Regulation 31 (Materials in contact with potable water). Construction from Stainless Steel was the only way to go.

Hydrok took the early concept of posts with flat panels, and designed folded panels, that did not require posts, thus removing the manual handling difficulties associated with these large heavy posts



TYPICAL PANEL DETAIL - 316 ST/STL
1234 X 1006 - 42Kg

3D drawing showing the wall constructed, these walls are designed to force water around the baffles to allow time for chemical reaction to take place at Northcombe WTW.



Walls nearing completion



Close up of installed panels

People involved

Michael Orchard - Hydrok



Dave Hollyoak - BBUL



Bob Keast - SWW



Conclusion

The work was completed in the 3 weeks allowed by Operations, and the tank was brought back on-line without problem.
The innovative design from the team, ensured the safety of drinking water for Northcombe supply area, with less risk to construction personnel.