

CASE STUDY

FORMWORK REMOVAL - BRIDGE SEGMENT



OBJECTIVES

To meet the production and delivery schedule for precast segments, the project aims to achieve a demoulding strength of 15 MPa within 12 hours and a lifting strength of 33 MPa within 24 hours. The project wants to optimize the cycle time and reduce the risk of delay. The project seeks to shorten the cycle time without increasing the concrete grade.

The early-age strength of in-place concrete often differs from standard-cured cubes due to temperature variations. In-place concrete experiences higher temperatures from the heat of hydration, speeding up the curing process and leading to higher early-age strength compared to the ambient temperature conditions of standard-cured cubes.

SOLUTION BY CONCRETEAI

ConcreteAI utilises **temperature-matched curing** which cures concrete cubes to the same temperature profile in real-time automatically as the concrete element with ConcreteAI SmartTank to achieve accelerated curing.

This method is referenced by BS 1881:130, which is approved by BCA for assessment of in-place concrete strength for early-age activities.



BENEFITS AND ROI

Both the demoulding and lifting cycle times are **reduced by over 30%**, enabling projects to meet target cycle times without the need for higher-grade concrete.

ROI: After accounting for ConcreteAI's cost, the solution delivered net savings of over \$300K in concreting expenses while keeping the project on track to produce 80 segments per month.

Target strength, MPa	Standard Cured Cube Testing Age	(In-situ concrete) Temperature Matched Curing Cube Testing Age
15 MPa	18 Hours	10 Hours
33 MPa	30 Hours	18 Hours

