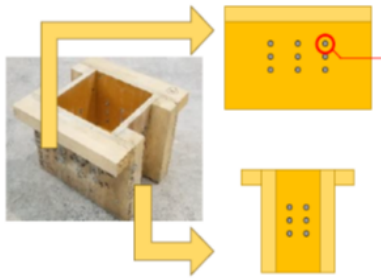
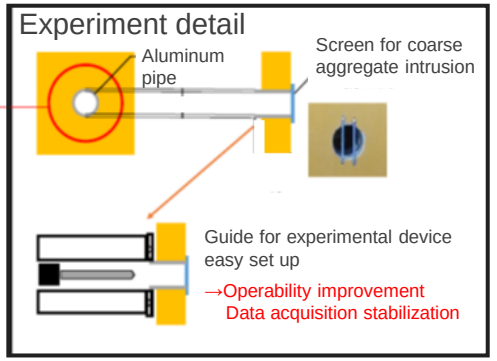
Tohoku Univ. Technology

The measurement of early age concrete strength before demolding

Enable on-site, nondestructive, simple and accurate measurement of early age concrete strength





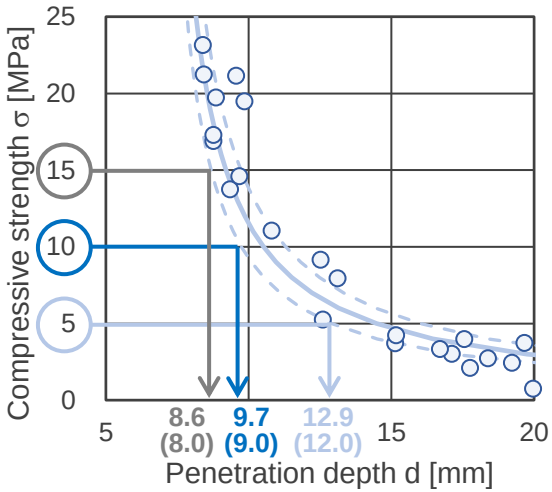
Overview

There is a guideline that concrete structure should not be demolded (removal of the mold) until the initial strength reach at a sufficient level. A simple and accurate strength measurement method is required before demolding in order to shorten the construction time. Conventionally, specimens should be prepared to measure the strength so it is time-consuming and costly. The some pin penetration methods are available, e.g. for shotcrete in tunnels, but they are not easy to introduce because of expensive specialized equipment requirements.

The strength measurement on BOSS specimen which is extra-constructed on a structure is also known for its high accuracy, but it requires time for separating the specimen from the structure and does not allow the compressive test on-site. Other non-destructive test methods also exist, but there is no method applicable before demolding.

This invention is about a simple technique for measuring the concrete strength on-site, from the pre-demolding stage, using a pin penetration device. The configuration of the measuring section and equipment enables high accurate measurement with reduced influence of coarse aggregate in a non-destructive manner.

Able to estimate the compressive strength from the pin penetration depth



QR code to watch the experiment ⇒

https://youtu.be/EfoSIH-q0Aw

Product Application

- Determination of whether concrete structure can be demolded or not

Related Works

[1] NISHIWAKI Tomoya, NARANTOGTOKH Bayarjavkhlan, HARA Shoumi, MALIHA MAISHA: A method to estimate the early age compressive strength of concrete before demolding using a pin penetration device, Journal of Structural and Construction Engineering (Architectural Institute of Japan) (under review)

IP Data

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