

# Studi Korelasi Cepat Rambat Gelombang Longitudinal Dengan Modulus Elastisitas Beton Non OPC = Study Of Longitudinal Wave Velocity Correlation With The Elastic Modulus Of Non OPC Concrete

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## Abstrak

Beton merupakan material yang kerap digunakan dalam suatu struktur bangunan dan jembatan. Beton memiliki properti material berupa kuat tekan dan modulus elastisitas dimana kedua variabel memiliki andil besar dalam proses desain struktur. Nilai kedua parameter tersebut dapat diperoleh melalui pengujian properti material beton baik secara destruktif maupun non destruktif.

Korelasi antara pengujian destruktif dan non destruktif bersifat empiris sehingga memerlukan studi lebih lanjut dalam menilai dampak setiap variasi material pada beton. Penelitian ini melakukan pengujian destruktif dan non destruktif terhadap beton instan non OPC dimana sampel yang digunakan dalam setiap proses pengujian merupakan produk PT. Solusi Bangun Indonesia Tbk. Pengujian destruktif yang dilakukan berupa uji kuat tekan dan uji modulus elastisitas, sedangkan pengujian non destruktif yang dilakukan berupa uji Ultrasonic Pulse Velocity (UPV).

Hasil pengujian antara kedua jenis metode digunakan untuk membentuk korelasi antara pengujian destruktif dan non destruktif spesifik untuk beton dengan tipe yang sama. Pembentukan korelasi antara uji kuat tekan dengan cepat rambat gelombang menghasilkan korelasi meningkat secara eksponensial dan korelasi antara uji modulus elastisitas dengan cepat rambat gelombang menghasilkan korelasi meningkat secara logaritmik.

.....Concrete is a material that is often used in a building structure and bridges. Concrete has material properties in the form of compressive strength and modulus of elasticity where these two variables play a large role in the structural design process. The values ??of these two parameters can be obtained by testing the properties of the concrete material both destructively and non-destructively.

The correlation between destructive and non-destructive testing is empirical so that it requires further studies in assessing the impact of each material variation on concrete. This study conducted destructive and non-destructive tests on non-OPC instant concrete where the samples used in each testing process were products of PT. Build Solutions Indonesia Tbk. Destructive tests were carried out in the form of compressive strength tests and modulus of elasticity tests, while non-destructive tests were carried out in the form of Ultrasonic Pulse Velocity (UPV) tests.

The test results between the two types of methods are used to establish a correlation between specific destructive and non-destructive tests for concrete of the same type. Establishing a correlation between the compressive strength test and the wave propagation speed resulted in an exponentially increasing correlation and the correlation between the elastic modulus test and the wave propagation speed resulted in a logarithmically increasing correlation.