Pengaruh umur pada beton daur ulang terhadap cepat rambat gelombang ultrasonik = Study to analyse the influence of concrete age on ultrasonic pulse velocity in recycled concrete / Balqis Fara Norita

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Abstrak

ABSTRAK
Indonesia terletak pada pertemuan tiga lempeng utama dunia, yaitu lempeng Eurasia, Indoaustralia, dan Pasifik. Hal tersebut membuat Indonesia memiliki potensi terjadi gempa bumi yang tinggi. Dilansir dari (BBC News, 2018), wilayah Indonesia berpotensi mengalami gempa kuat terimplikasi dari adanya sekitar enam tumbukan lempeng aktif. Bencana alam selalu menyisakan puing-puing bangunan yang telah hancur dan rusak. Peneliti Pusat Litbang Perumahan dan Permukiman, Badan Penelitian dan Pengembangan, Kementerian Pekerjaan Umum dan Perumahan Rakyat (PUPR), M. Edi Nur, mengatakan bahwa puing bangunan sisa bencana bisa saja menjadi sampah, tetapi ada juga yang masih dapat dimanfaatkan. Menurut (Haryanti, 2018), dalam satu rumah bertembok sederhana terdapat unsur beton sebanyak 22%, lalu unsur tembok, lantai, serta genteng sebesar 60%, dan masih ada unsur kayu atau bambu sekitar 18%. Limbah beton tersebut dapat dimanfaatkan kembali menjadi agregat daur ulang penyusun beton. Penulis melakukan penelitian mengenai karakteristik beton dengan material subtitusi agregat kasar daur ulang mengenai kuat tekan dan homogenitasnya pada umur muda hingga optimum. Terdapat dua metode pengujian yang dilakukan terhadap beton daur ulang ini, yaitu metode destruktif dan non-destruktif. Dimana pengujian destruktif yang dilakukan ialah crushing test untuk mendapatkan nilai kuat tekan dan pengujian non-destruktif yang dilakukan ialah Ultrasonic Pulse Velocity (UPV) test untuk mendapatkan nilai kecepatan rambat gelombang ultrasonik pada beton daur ulang. Selain menganalisis karakteristik beton daur ulang dari nilai kuat tekan dan nilai kecepatan rambat gelombangnya, dilakukan pengolahan untuk mengetahui hubungan dari kedua variabel tersebut. Penelitian ini mendapatkan persamaan hubungan kuat tekan dengan kecepatan rambat gelombang yaitu dengan koefisien determinasi sebesar R2 = 0,6985272443.Selanjutnya karakteristik homogenitas beton daur ulang akan dilihat tingkat homogenitasnya melalui nilai kecepatan rambat gelombang dimulai dari empat atau lima jam setelah proses pengadukan.
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ABSTRACT
Indonesia is located at the confluence of three major plates of the world, the Eurasia Plates, Indo-Australia, and the Pacific. This makes Indonesia has the highest potential for earthquakes to happen. Reported by (BBC News, 2018), Indonesias region has the potential to encounter a strong earthquake implicated by, at least six active plates collision. Natural disaster always left ruins of buildings which have been ruined. Researcher at the Research and Development Agency, Ministry of Public Works and Public Housing, M. Edi Nur, conveyed that ruins of buildings remained from natural disaster could become trash, but some could also be used as something useful. According to (Haryanti, 2018), in a simple walled house usually has as many as 22% of concrete elements, wall elements, floor, and roof as many as 60%, and the other 18% are wood or bamboo elements. The concrete waste can be reused into recycled concrete complier aggregates. The writer did research about concrete characteristics with coarse recycled aggregate substitution material

regarding the compressive strength and its homogeneity at early age to optimum age. There are two testing methods done for this recycled concrete, destructive methode and non-destructive methode. The destructive methode is done by crushing test to achieve the compressive strength value and the non-destructive method is done by Ultrasonic Pulse Velocity (UPV) test to gain ultrasonic pulse velocity value of the recycled concrete. Aside from analizing the characteristics of the recycled concrete from compressive strength value and the ultrasonic pulse velocity value, a process is done to acknowledge the relation between the two variables. This research gained the equation of the relation between compressive strength and ultrasonic pulse velocity, which is with coefficient of determination in the amount of R2 = 0,6985272443. Hereafter, the characteristics of recycled concrete homogeneity will be seen from the level of its homogeneity through the amount of ultrasonic pulse velocity starting from four or five hours after casting process.