

Evaluasi Kinerja Balok Beton Dry Mix K250 dan Balok Beton Ringan Fc`20 MPa Beragregat Polipropilen Terhadap Pengujian Three Points Loading = Performance Evaluation of Dry Mix Concrete Beam K250 and Lightweight Concrete Beam Fc`20 MPa Aggregated Polypropylene on the Three Points Loading Testing

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Abstrak

Balok menggunakan beton dry mix dan beton ringan beragregat kasar polipropilen di coating dengan pasir Subang. Rancang campur yang digunakan adalah metode volume dengan perbandingan semen : pasir : agregat : air adalah 1 : 2 : 2,6 : 0,9. Terdapat empat jenis variasi penulangan yang digunakan dalam penelitian ini; balok beton tanpa tulangan (balok A), balok beton dengan tulangan tarik tanpa sengkang (balok B), balok beton dengan tulangan tarik dan terdapat sengkang U (balok C), balok beton dengan tulangan tarik dan sengkang penuh (balok D). Nilai kuat tekan balok menggunakan UPV (ultrasonic pulse velocity) untuk beton dry mix didapat 24,69 MPa dengan standar deviasi 2,44 dan untuk beton ringan didapat 21,3 MPa dengan standar deviasi 0,52. Berdasarkan pola retak yang dihasilkan dari masing-masing balok, disimpulkan bahwa pola retak balok beton normal didominasi oleh retak lentur geser sama dengan balok beton ringan didominasi juga oleh lentur geser. Disimpulkan bahwa balok beton ringan mempunyai kekakuan lentur, menahan beban maksimum saat pengujian lentur, momen nominal untuk blok tegangan, dan tegangan balok beton maksimum yang lebih besar daripada balok beton normal. Balok beton normal hanya lebih tinggi pada nilai kurvatur nya daripada balok beton ringan.

..... The beams use dry mix concrete and lightweight concrete with coarse aggregated polypropylene coated with Subang sand. The mixed design used is the volume method with the ratio of cement: sand: aggregate: water is 1: 2: 2.6: 0.9. There are four types of reinforcement variations used in this study; concrete beams without reinforcement (beam A), concrete beams with tension reinforcement without stirrups (beam B), concrete beams with tension reinforcement and there are U stirrups (beam C), concrete beams with tension reinforcement and full stirrups (beam D). The compressive strength of the beam using UPV (ultrasonic pulse velocity) for dry mix concrete was 24.69 MPa with a standard deviation of 2.44 and for lightweight concrete it was obtained 21.3 MPa with a standard deviation of 0.52. Based on the crack pattern generated from each beam, is it safe that the crack pattern of normal concrete beams controlled by flexural cracking is the same as that of lightweight concrete beams controlled by shear flexure. It was concluded that lightweight concrete beams have flexural stiffness, withstand the maximum load during flexural testing, nominal moments for stress blocks, and maximum concrete beam stresses that are greater than normal concrete beams. Normal concrete beams are only higher in their curvature values than lightweight concrete beams.