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APPROVAL AND DECLARATION SHEET

This project report titled "Comparison of Natural Coarse Aggregate and Recycled Coarse Aggregate in Concrete" was prepared and submitted by Khairul Muzzamil Bin Azmi (Matrix Number: 101201975) and has been found satisfactory in terms of scope, quality and presentation as partial fulfillment of the requirement for the Bachelor of Engineering (Building Engineering) in Universiti Malaysia Perlis (UniMAP).

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PERBANDINGAN ANTARA AGREGAT KASAR SEMULA JADI DENGAN AGREGAT KASAR KITAR SEMULA DI DALAM KONKRIT

ABSTRAK

Sebagai sebuah negara membangun, pembinaan adalah salah satu pendapatan utama pengeluar di Malaysia. Sejumlah besar sisa perobohan dihasilkan daripada aktiviti-aktiviti ini. Di Malaysia, sisa pembinaan telah menyebabkan kesan yang besar ke atas alam sekitar. Sisa ini perobohan adalah pelupusan haram atau dilupuskan di tapak pelupusan. Kajian ini untuk mengenal pasti dan berbanding sifat-sifat agregat kasar asli (NCA) dan agregat kasar kitar semula (RCA). Tiga campuran konkrit dengan sasaran kekuatan mampatan kiub yang terdiri pada 20 MPa menggunakan agregat dikitar semula (RA) dan satu bercampur untuk agregat semulajadi (NA). Untuk kajian ini, peratusan RCA dalam campuran konkrit adalah 50%, 70% dan 100%. Untuk mendapatkan perbezaan daripada kedua-dua agregat, analisis seperti analisis saiz zarah, kebolehkerjaan, penyerapan air dan kekuatan mampatan yang disediakan. Daripada keputusan menunjukkan bahawa campuran konkrit NA mempunyai kekuatan lebih daripada RA, penyerapan air yang lebih tinggi daripada RA, NA kebolehkerjaan yang lebih tinggi daripada RA dan akhir sekali penyerapan air RA tinggi daripada NA. Untuk kesimpulan dalam kajian ini berdasarkan keputusan daripada analisis, peratusan RA yang sesuai untuk digunakan dalam campuran konkrit adalah 70% dan memenuhi standard dalam konkrit.

ABSTRACT

As a developing country, construction is the one of main incomes producing in Malaysia. Huge amount of demolition waste were produced from these activities. In Malaysia, the construction waste has cause a significant impact on the environmental and also increasing trend. These demolition wastes are disposal illegally or disposed at landfill. This research to identify and compared the properties of natural coarse aggregate (NCA) and recycled coarse aggregate (RCA). Three mixes of concrete with target compressive cube strength ranging at 20 MPa were cast using recycled aggregate (RA) and one mixed for natural aggregate (NA). For this study, the percentage of RCA in concrete mix is 50%, 70% and 100%. To get the different of both aggregates, analysis such as particle size analysis, slump test, water absorption and compressive strength are provided. From the results shown that concrete mix NA have more strength than RA, water absorption of RA higher than NA, workability of NA higher than RA and lastly water absorption of RA higher than NA. For conclusion in this research based on the results from analysis, the percentages of RA suitable to use in concrete mix are 70% and fulfil the standard in concrete.

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LIST OF ABBREVIATIONS

RAC	-	Reinforced Aggregate Concrete
OPC	-	Ordinary Portland Cement
mm	-	Millimeter
BS	-	British Standard
ASTM	-	American Society for Testing and Materials
kg	-	Kilogram
MPa	-	Mega Pascal
m^3	-	meter cubic
%	-	Percentage
RCA	-	Recycled Coarse Aggregate
NCA	-	Natural Coarse Aggregate