

INTISARI

Perkerasan kaku dirancang mampu menerima beban lalu lintas yang padat. *Roller compacted concrete* (RCC) merupakan alternatif perkerasan kaku yang mempunyai nilai faktor air semen yang rendah dibandingkan beton normal. Pelaksanaan RCC pada perkerasan jalan sama dengan pekerjaan HMA yang membutuhkan waktu lebih cepat. Penelitian bertujuan untuk mendapatkan campuran *roller compacted concrete* (RCC) yang dapat digunakan pada umur beton 1 hari.

Penelitian ini dilakukan di laboratorium bahan bangunan Universitas Gadjah Mada Yogyakarta. *Mix design* RCC menggunakan nilai faktor air semen sebesar 0,25. Komposisi bahan tambah yang digunakan berupa *silicafume* sebesar 10%, *superplasticizer* 2,4%, dan serat baja (dramix) dengan variasi 0,5% dan 1%. Pematatan RCC menggunakan alat *standar proctor*. Pengujian kuat lentur dan kuat tekan pada beton umur 1 hari dan 28 hari. Kekuatan beton hasil pengujian digunakan untuk perancangan tebal perkerasan RCC menggunakan metode AASHTO 1993 dengan nilai CBR yang digunakan 2%, 4%, 6%, dan 8%.

Hasil penelitian RCC variasi serat baja 0,5% beton umur 1 hari diperoleh kuat lentur 4,2 MPa dan kuat tekan 11,05 MPa, sedangkan beton umur 28 hari diperoleh kuat lentur 5,7 MPa dan kuat tekan 28,53 MPa. Variasi serat baja 1% beton umur 1 hari diperoleh kuat lentur 3,4 MPa dan kuat tekan 11,33 MPa, sedangkan beton umur 28 hari diperoleh kuat lentur 6,1 MPa dan kuat tekan 25,90 MPa. Hasil perancangan tebal perkerasan RCC, beton umur 1 hari mampu menerima beban lalu lintas rencana dengan membatasi jenis kendaraan.

Kata kunci : *Roller Compacted Concrete* (RCC), Serat baja (dramix), Kuat lentur, Kuat tekan, AASHTO 1993.

ABSTRACT

Rigid pavement is designed to be able to accept heavy traffic loads. Roller compacted concrete (RCC) is an alternative rigid pavement that has a low cement water ratio value compared to normal concrete. The implementation of the RCC on road pavement is the same as HMA's work which requires faster time. The study aims to obtain a mixture of roller compacted concrete (RCC) which can be used at a concrete age of 1 day.

This research was carried out in the laboratory of building materials at Gadjah Mada University, Yogyakarta. Mix RCC design using the value of cement water factor of 0.25. The added material composition used in the form of silicafume is 10%, 2.4% superplasticizer, and steel fiber (dramix) with variations of 0.5% and 1%. RCC compaction uses a standard proctor tool. Testing of flexural strength and compressive strength in concrete aged 1 day and 28 days. The strength of the tested concrete was used for the thick design of RCC pavement using the 1993 AASHTO method with the CBR values used were 2%, 4%, 6%, and 8%.

The result of research of RCC variation of 0.5% steel fiber and 1 day old concrete obtained Flexural Strength of 4,2 MPa and Compressive Strength 11,05 MPa, while 28 days old concrete gained Flexural Strength of 5,7 MPa and Compressive Strength 28,53 MPa. The variation of 1% steel fiber 1 day old concrete obtained 3.4 MPa Flexural Strength and 12.26 Mpa Compressive Strength, while the 28 days old concrete obtained 6.1 MPa Flexural Strength and 28.01 MPa Compressive Strength. The result of thickness design of RCC pavement shows that 1 day concrete is able to accept the traffic load plan with limited type.

Keywords: *Roller Compacted Concrete (RCC), Steel Fiber (dramix), Flexural Strength, Compressive Strength, AASHTO 1993.*