

**PERENCANAAN ULANG STRUKTUR ATAS JEMBATAN
MENGUNAKAN BETON BERTULANG BALOK “T”
DENGAN APLIKASI MIDAS CIVIL
Studi Kasus : (Jembatan Sungai Bengkalis –Jalan Bengkalis)**

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Abstrak

Jembatan merupakan salah satu infrastruktur vital dalam mendukung konektivitas dan mobilitas masyarakat. Penelitian ini dilakukan sebagai perencanaan ulang struktur atas Jembatan Sungai Bengkalis yang mengalami penurunan kapasitas layanan akibat kerusakan pada elemen kolom. Perencanaan ulang dilakukan dengan menggunakan gelagar beton bertulang tipe T (T-Girder) serta pemodelan struktur melalui perangkat lunak Midas Civil. Metodologi penelitian meliputi survei lapangan, analisis dimensi struktur, perhitungan pembebanan (beban mati, beban hidup, beban angin), serta analisis dan desain ulang struktur. Hasil perhitungan menunjukkan bahwa struktur jembatan dengan panjang bentang 14 meter, tinggi gelagar 1 meter, jarak antar gelagar 1,2 meter, dan pelat lantai setebal 200 mm, memenuhi kriteria keamanan berdasarkan kombinasi beban sesuai SNI 1725:2016. Momen ultimit akibat kombinasi beban kuat I mencapai 50,37 kNm. Penulangan slab menggunakan tulangan lentur D14 dengan luas penulangan 1.282,16 mm² yang memenuhi syarat kekuatan lentur. Hasil pemodelan di Midas Civil menunjukkan bahwa struktur mampu menahan beban secara efisien dan aman.

Kata kunci : Jembatan, MIDAS Civil, Perencanaan ulang, Struktur atas, T-Girder

**"REPLANNING OF THE BRIDGE SUPERSTRUCTURE USING
T-BEAM REINFORCED CONCRETE WITH THE
APPLICATION OF MIDAS CIVIL
Case Study: (Bengkalis River Bridge – Bengkalis Road)"**

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Abstract

Bridge structures are vital infrastructure that support the connectivity and mobility of communities. This study was conducted as a redesign of the superstructure of the Bengkalis River Bridge, which experienced a decrease in service capacity due to damage to its column elements. The redesign utilizes reinforced concrete T-girders and structural modeling using Midas Civil software. The research methodology includes field surveys, structural dimension analysis, load calculations (dead load, live load, wind load), as well as structural analysis and redesign. The calculation results show that the bridge structure, with a span length of 14 meters, girder height of 1 meter, spacing between girders of 1.2 meters, and a deck slab thickness of 200 mm, meets safety criteria based on load combinations according to SNI 1725:2016. The ultimate moment due to load combination Strength I reaches 50.37 kNm. The slab reinforcement uses D14 flexural bars with 1282,16 mm² an area that satisfies flexural strength requirements. The modeling results in Midas Civil indicate that the structure is capable of efficiently and safely withstanding the applied loads.

Keywords: Bridge, MIDAS Civil, Redesign, Superstructure, T-Girder.