

Sebagai pulau dengan populasi terpadat kedua di Indonesia setelah Pulau Jawa, Pulau Sumatra menghadapi rintangan berat dalam usaha konektivitas penduduknya. Pemerintah Indonesia melakukan langkah besar dalam upaya mengurangi kesenjangan infrastruktur tersebut, salah satunya dengan pembangunan Jalan Tol Trans-Sumatra yang membentang sepanjang Pulau Sumatra dengan nilai investasi mencapai 340 triliun rupiah. Jalan Tol Kayu Agung-Palembang-Betung Paket II Seksi 3 (KAPBII-3), bagian dari Jalan Tol Trans-Sumatra, adalah jalan tol yang menghubungkan Musilandas hingga Betung. Dalam tugas akhir ini, penulis mengevaluasi desain dari salah satu STA Tol KAPBII-3 mengikuti standar yang berlaku.

Evaluasi desain didahului dengan pemeriksaan dan pengambilan data dari dokumen proyek pihak yang bersangkutan. Pemodelan dan analisis struktur dengan menggunakan standar terbaru, yaitu SNI 1725:2016, SNI 2833:2016, SNI 2847:2019, dan AASHTO-LRFD *Bridge Design Specifications* tahun 2012. Dalam evaluasi desain, diambil *abutment* pada STA 83+975 dan 10 pasang *pile slab* didepannya, dianalisis secara manual dan numerik menggunakan aplikasi SAP2000 pada komponen *pile slab* dan tiang pancangnya.

Hasil evaluasi desain didapatkan bahwa struktur *abutment* aman terhadap guling, geser, dan daya dukung tanah. Struktur *slab on pile* eksisting aman terhadap beban aksial dan kombinasi beban aksial momen (*PMM ratio*). Kapasitas komponen pelat lantai aman dalam menahan beban ultimit berupa momen lentur, gaya geser, lendutan vertikal, gaya geser pons, dan momen pelat akibat beban roda truk. Kapasitas komponen *spun pile* aman dalam menahan beban ultimit berupa gaya aksial, gaya geser, perpindahan lateral, kombinasi momen lentur dan aksial, serta tekuk (*buckling*).

**Kata kunci:** *abutment*, *slab on pile*, pelat lantai, *spun pile*, evaluasi desain, KAPBII-3

*As the island with the second most populous population in Indonesia after Java Island, Sumatra faces serious obstacles to connect its population. The Indonesian government is taking big steps in efforts to reduce infrastructure disparities, one of which is the construction of the Trans-Sumatra Toll Road which stretches along Sumatra Island with an investment value of up to 340 trillion rupiah. Kayu Agung-Palembang-Betung Package II Toll Road Section 3 (KAPBII-3), part of the Trans-Sumatra Toll Road, is a toll road that connects Musilandas to Betung. In this thesis, the author evaluates the design of one of the stationing in KAPBII-3 Toll Road following the applicable standards.*

*Design evaluation is preceded by examining and collecting data from project documents, modeling and structural analysis using the latest standards, SNI 1725:2016, SNI 2833:2016, SNI 2847:2019, AASHTO LRFD Bridge Design Specification 2007. In the design, the abutment on STA 83+975 and 10 pairs of pile slabs in front of it were analyzed manually and numerically using the SAP2000. If there are components that do not meet the requirements, suggestions will be given to comply.*

*The results of found that the abutment structure is safe against overturning, shearing and soil bearing capacity. The existing slab on pile structure is safe against axial load and combined moment axial load (PMM ratio). The capacity of floor slab components is safe to withstand ultimate loads in the form of bending moments, shear forces, vertical deflections, punching shear forces, and plate moments due to truck wheel loads. The capacity of spun pile components is safe to withstand ultimate loads in the form of axial forces, shear forces, lateral displacements, combined bending and axial moments, and buckling.*

**Keywords:** *abutment, slab on pile, slab, spun pile, design evaluation, KAPBII-3*