ABSTRAK

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Judul Skripsi	:	Analisis Ulang Struktur Dermaga Kapal Penyeberangan Serasan, Kabupaten Natuna, Kepulauan Riau

Dermaga Serasan di Kabupaten Natuna berperan vital dalam mobilitas perbatasan, namun usia layanan dan paparan lingkungan laut menimbulkan risiko penurunan kapasitas struktur. Penelitian ini bertujuan mengevaluasi kelayakan struktur dermaga eksisting. Analisis dilakukan dengan Midas Civil berbasis *Finite Element Analysis* (*FEA*), mengacu pada SNI 1725:2016, SNI 2833:2016, dan SNI 2847:2019. Hasil menunjukkan pelat, balok, dan tiang pancang masih aman menahan beban mati, hidup, D, T, tumbukan kapal, serta gempa dinamis dengan rasio pengecekan < 1. Frekuensi getar pelat > 60 Hz, di atas batas 3 Hz. Kesimpulannya, dermaga masih layak beroperasi dalam menaham beban yang bekerja.

Kata Kunci: Dermaga, Analisis Ulang, Finite Element Analysis, Midas Civil, Gempa

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The Serasan Pier in Natuna Regency plays a vital role in border mobility; however, service age and marine exposure pose risks of reduced structural capacity. This study aims to evaluate the feasibility of the existing pier structure. The analysis was conducted using Midas Civil with a Finite Element Analysis (FEA) approach, referring to SNI 1725:2016, SNI 2833:2016, and SNI 2847:2019. The results indicate that the slab, beam, and pile elements remain safe in resisting dead load, live load, lane load D, truck load T, berthing forces, and dynamic earthquake loads with safety ratios < 1. The slab vibration frequency exceeds 60 Hz, above the 3 Hz limit. In conclusion, the pier remains feasible for sustaining operational and seismic loads.

Keywords: Pier, Re-analysis, Finite Element Analysis, Midas Civil, Earthquake