

**THE ANALYSIS OF EXISTING BRIDGE SUPERSTRUCTURE BY
USING MIDAS CIVIL APPLICATION
(CASE STUDY: BENGKALIS RIVER BRIDGE)"**

Student Name : Anisa Rizqi Azhura Amin
NIM : 4204211387
Academic Advisor : Dedi Enda, M.T

Abstract

The Sun Bengkalis Bridge is a vital infrastructure that connects access to the Roro port and supports the community's economic activities. The existing condition shows damage to several elements of the superstructure, prompting a re-analysis to improve user safety.

This study was conducted through field surveys to measure the existing condition, cross-sectional profile of the river, and bridge dimensions. The loading analysis refers to SNI 1725:2016 and includes dead load, traffic load, asphalt load, rainwater load, braking force, pedestrian load, and wind load. Structural modeling was performed using MIDAS Civil software to determine bending moments, shear forces, and deflections.

The analysis results show that the use of composite I-girder beams produced an ultimate design moment of 1053.3 kN, which is lower than the available moment (M_u) of 16613.2 kN. The maximum deflection of 0.014 m is still below the allowable deflection of 0.03889 m, indicating that the structure is safe. The maximum shear force obtained is $0.027 < 1.000$, thus the profile used is considered safe. Therefore, the use of composite I-girder beams is technically feasible and can improve the performance of the bridge superstructure.

Keywords: Existing bridge, Composite I-Girder Beam, MIDAS Civil, Superstructure, SNI 1725:2016.