

Pembangunan jalan tol di ruas Yogyakarta – Bawen, menghadapi banyak rintangan geografis. Rintangan tersebut meliputi sungai, lembah, dan daerah rawan bencana. Untuk menanggulangi masalah tersebut maka diperlukan jembatan, salah satu jenis jembatan yang digunakan adalah jembatan komposit. Jembatan komposit merupakan jembatan yang memanfaatkan dua atau lebih jenis material, seperti material beton dengan baja. Pada Pembangunan jalan tol ini terdapat jembatan menggunakan jembatan komposit *corrugated steel plate*. Jembatan komposit *corrugated steel plate* adalah jembatan yang mengkombinasikan beton bertulang dan *corrugated steel plate* (baja bergelombang). Jembatan komposit *corrugated steel plate* ialah tipe jembatan yang masih jarang digunakan di Indonesia. Sehingga perlu dilakukan review desain guna mengetahui gaya dalam, lendutan, dan tegangan yang terjadi. Selain itu memastikan komponen baja memenuhi kapasitas gaya yang diperlukan.

Analisis jembatan komposit *corrugated steel plate* menggunakan *software SAP2000*. Analisis jembatan mengacu pada SNI 1725:2016 tentang Pembebanan Untuk Jembatan dan SNI 2833:2016 tentang Perencanaan Jembatan Terhadap Beban Gempa

Hasil analisis yang dilakukan terhadap struktur Jembatan komposit *corrugated steel plate* Jalan tol Yogyakarta – Bawen STA 70+349, struktur jembatan memenuhi syarat baik berdasarkan Perencanaan Beban Kekuatan Terfaktor (PBKT) dan Perencanaan Batas Layan (PBL). Analisis memaparkan bahwa gaya dalam pada struktur komposit, tegangan, dan lendutan berada di bawah batas kapasitas izin. Jembatan juga memenuhi kriteria keamanan terhadap *compression failure*, *plastic hinge*, *connection failure*, dan *deformation*. Selain itu, komponen *shear connector*, *base channel*, angkur, dan tulangan penyalur dipastikan sesuai standar perhitungan yang berlaku. Berdasarkan hasil dari *review* desain, jembatan komposit *corrugated steel plate* dinyatakan aman karena telah memenuhi semua persyaratan peraturan yang berlaku.

Kata kunci: *Corrugated steel plate*, Jembatan, *Review* desain, Struktur komposit,

The construction of the Yogyakarta–Bawen toll road faced numerous geographical challenges. These included rivers, valleys, and disaster-prone areas. To address these challenges, bridges were needed, one type of bridge that was used being a composite bridge. A composite bridge utilized two or more materials, such as concrete and steel. This toll road construction included a corrugated steel plate composite bridge. A corrugated steel plate composite bridge combined reinforced concrete and corrugated steel plate. This type of bridge was still rarely used in Indonesia. Therefore, a design review was necessary to determine the internal forces, deflections, and stresses that occurred. Furthermore, the steel components had to meet the required load capacity.

The analysis of the Corrugated Steel Plate Composite Bridge used SAP2000 software. The bridge analysis referred to SNI 1725:2016 concerning Bridge Loading and SNI 2833:2016 concerning Bridge Design for Seismic Loads.

The results of the analysis conducted on the Corrugated Steel Plate Composite Bridge structure indicated that the bridge structure met the requirements based on both Factored Strength Load Design (PBKT) and Serviceability Limit Design (PBL). The analysis showed that the internal forces in the composite structure, stress, and deflection were below the allowable capacity limits. The bridge also met the safety criteria against compression failure, plastic hinge, connection failure, and deformation. In addition, the shear connector, base channel, anchor, and reinforcement components were ensured to comply with applicable calculation standards. Based on the results of the design review, the Corrugated Steel Plate Composite Bridge was declared safe because it had met all applicable regulatory requirements.

Keywords: Corrugated steel plate, bridge, Review design, Composite structure