ABSTRAK

Tugas Akhir ini bertujuan merencanakan struktur atas jembatan beton bertulang bentang 16 meter di Kota Pariaman serta menghitung lendutan yang terjadi. Kota Pariaman berada pada zona rawan gempa dengan nilai PGA 0,24–0,53 g, sehingga perencanaan harus memenuhi aspek kekuatan dan keamanan struktur. Perencanaan mengacu pada SNI 1725:2016, SNI 2833:2016, dan SNI 2847:2019. Analisis struktur dilakukan menggunakan software SAP2000 versi 26 dengan tinjauan beban meliputi berat sendiri (MS), beban mati tambahan (MA), beban lajur "D" (TD), beban truk "T" (TT), beban pejalan kaki (TP), beban rem (TB), beban angin (EW), dan beban gempa dengan metode analisis statik ekivalen. Hasil perencanaan diperoleh dimensi gelagar 45 × 110 cm dengan tulangan lentur 20D-25 (tarik) dan 10D-25 (tekan), tulangan geser 2D13-100 mm (tumpuan) dan 2D13-200 mm (lapangan); diafragma 30 × 60 cm dengan tulangan 3D-16; pelat lantai kendaraan tebal 20 cm dengan tulangan D16-200 mm (arah X) dan D10-150 mm (arah Y); serta trotoar lebar 0,50 m dengan tulangan D16-250 mm. Hasil kontrol lendutan menunjukkan nilai lendutan terjadi 6,2 cm lebih kecil dari lendutan ijin 6,4 cm (L/250), sehingga struktur dinyatakan aman.

Kata kunci: Jembatan beton bertulang, struktur atas, SNI 1725:2016, SAP2000, lendutan

ABSTRACT

This final project aims to design the upper structure of a 16-meter span reinforced concrete bridge in Pariaman City and to calculate the resulting deflection. Pariaman City is located in a seismic-prone zone with Peak Ground Acceleration (PGA) values ranging from 0.24 to 0.53 g, requiring the design to satisfy both strength and structural safety requirements. The design refers to SNI 1725:2016, SNI 2833:2016, and SNI 2847:2019. Structural analysis was performed using SAP2000 version 26 software, considering loads including self-weight (MS), superimposed dead load (MA), lane load "D" (TD), truck load "T" (TT), pedestrian load (TP), braking force (TB), wind load (EW), and seismic load using the equivalent static analysis method. The design results yielded girder dimensions of 45 × 110 cm with flexural reinforcement of 20D-25 (tension) and 10D-25 (compression), shear reinforcement of 2D13-100 mm (support) and 2D13-200 mm (midspan); diaphragm dimensions of 30 × 60 cm with 3D-16 reinforcement; a 20 cm thick vehicle deck slab with D16-200 mm (transverse direction) and D10-150 mm (longitudinal direction) reinforcement; and a 0.50 m wide sidewalk with D16-250 mm reinforcement. The deflection check showed that the occurred deflection of 6.2 cm is less than the allowable deflection of 6.4 cm (L/250), indicating that the structure is safe.

***Keywords**: Reinforced concrete bridge, upper structure, SNI 1725:2016, SAP2000, deflection*

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