INTISARI

Flyover Jombor merupakan salah satu perlintasan tidak sebidang untuk mengurai kemacetan pada pertemuan 4 simpang kawasan Jombor, Sleman. *Flyover* ini memiliki panjang total 1125 m dan lebar 7 meter dengan 2 lajur 1 jalur searah. Struktur atas dibuat dengan *box girder* beton prategang, peraturan pembebanan sesuai RSNI T-02-2005, dan beban gempa sesuai SNI T-04-2004-B. Dikarenakan adanya pembaharuan peraturan, maka dilakukan analisis ulang kekuatan struktur atas jembatan dan perancangan penampang alternatif desain dengan mengacu pada standar terbaru.

Analisis struktur ini dihitung dengan Microsoft Excel dan pemodelan digunakan *software* CSiBridge. Penampang digunakan sesuai penampang lapangan, penampang alternatif digunakan sesuai AASHTO-PCI-ASBI *Segmental Box girder Standards*, pembebanan sesuai SNI 1725:2016, beban gempa sesuai RSNI3 2833:201X, dan persyaratan beton sesuai SNI 2847:2013. Perancangan penampang alternatif digunakan variasi tinggi penampang yang didasarkan pada AASHTO-PCI-ASBI yaitu 2100 mm dan 2400 mm dengan material ditentukan sama dengan penampang eksisting.

Berdasarkan hasil analisis, diperoleh hasil penampang eksisting *flyover* Jombor dan penampang alternatif 2400 mm dapat digunakan sebagai alternatif desain, karena telah memenuhi syarat menurut SNI 1725:2016 dan RSNI3 2833:201X. Adapun penampang alternatif 2100 mm tidak dapat digunakan. Dengan kuat tekan beton yang sama, material pada penampang 2400 mm hasil perancangan lebih efisien dibandingkan struktur eksisting, dengan luas penampang beton 4,28 m^2 dibanding 6,54 m^2, jumlah *strands* yang lebih sedikit dengan selisih 24 buah pada diameter yang sama, dengan kontrol tegangan pada kondisi batas dan kapasitas momen yang lebih aman.

Kata kunci: *box girder*, beton prategang, *flyover*, CSiBridge

ABSTRACT

Flyover Jombor is an interchange building to unravel congestion conflict at a meeting point of 4 intersections in the Jombor area, Sleman, Yogyakarta. This flyover has a total length of 1125 m and a width of 7 m with 2 lanes of 1 lane in the same direction. The upper structure is made with prestressed concrete box girders, according to the loading regulations in RSNI T-02-2005, and following to earthquake load in SNI T-04-2004-B. Due to regulatory renewal, a re-analysis of the strength of the structure of the bridge and the design of an alternative cross-section of the design has to be done regarding the latest standards.

Analysis of this structure was calculated by Microsoft Excel and modeling used the CSiBridge software. Cross-sections are used according to the field cross-sections, alternative cross-sections are used according to AASHTO-PCI-ASBI Segmental Box girder Standards, loading regulation is following the SNI 1725:2016, earthquake load is following the RSNI3 2833:201X, and concrete requirements are in accordance with SNI 2847:2013. The alternative cross-section is designed with cross-section height variations based on AASHTO-PCI-ASBI which is 2100 mm and 2400 mm with the material is set to be the same as the existing cross-section.

Based on the results of the analysis, results obtained that the cross-section of the existing Jombor flyover and 2400 mm alternative cross-section can be use as an alternative design because it meets the SNI 1725:2016 and RSNI3 2833:201X requirements. Whereas the alternative cross-section of 2100 mm can not be used. With the same concrete compressive strength, the material at the 2400 mm cross-section is designed to be more efficient than the existing structure, with concret cross-section area in the amount of 4.28 m^2 compared to 6.54 m^2, the number of strands is lower with a difference of 24 strands in the same diameter, with safer stress control towards the limit state and moment capacity.

Keywords : box girder, prestressed concrete, flyover, CSiBridge