STRUCTURE REDESIGN OF THE KOTO BURUAK BRIDGE USING PCI-GIRDER BASED ON SNI 1725-2016 LOADING

(*Case Study: Nagari Koto Buruak, Kecamatan Lubuk Alung*)

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ABSTRACT

The Koto Buruak Bridge was built in 2014 using composite bridge construction. In this study, a redesign was carried out by designing the upper structure of the Koto Burak bridge using prestressed concrete construction and bridge loading referring to SNI 1725-2016. Prestressed concrete construction has strength against weight and tensile strength at the same time. The redesign of the bridge was carried out because heavy vehicles would pass through the bridge.

PCI Girder used as many as 30 pieces which are divided into each span where each span contains 5 segments, this precast concrete was purchased from PT. WIKA Riau. From the planning it is obtained the quality of the supports (49.028 kNm) and the field (42.918 kNm) on the slab using the main reinforcement D16-250 mm and reinforcement for D13-300 mm, the pavement self weight (10.868 kN) moment due to the live load on pedestrians (10.316 kNm) , the self-weight of the diaphragm (9.375 kN). Weight of prestressed beam (515.17 kN), shear force due to self-weight (497.586 kN), additional dead load (4.57 kN), lane uniform load (Q) (15.30 kNm), strip concentrated load (116.62 kN), brake force (117.57 kN), wind load (1.08 kNm), earthquake load (3.77 kNm), maximum moment due to beam weight (1931.892 kNm). Prestressing force at transfer Pt (2828.17 kN), final state (2329.085 kN). Prestress loss Pj (3327.26 kN), Po (3227.45 kN), Pi (1535.43 kN), Peff (957.30 kN).

Keywords *: PCI-Girder, prestress concrete,* SNI 1725:2016.