DESIGN OF GRINDULU BRIDGE IN PACITAN WITH BOX GIRDER PRESTRESSED SEGMENTAL KANTILEVER SYSTEM

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Abstract

Design of Grindulu bridge in Pacitan, Jawa Timur was designed with prestressed concrete box girder spans the entire 180 meters, divided into three spans that stands on 2 abutments and two piers with a length of 40 meters, 100 meters, 40 meters, and the width of the bridge planned 13 meters are included curbs. In the construction method used cantilever using the form traveler system with in-situ casting on each segment-segment in the process. In addition to considering the terrain is quite difficult.

Planning begins with the collection of technical data required in the planning, such as the data: soil, hydrology, transportation. Then followed by an explanation of the background of the bridge type selection, formulation of objectives of planning, discussion, and the basics of planning refers to the planning regulations bridge RSNI T-02-2005 and SNI T-12-2004. After it was done, preliminary design to determine the dimensions of the main bridge. In the early stages of planning calculation of the secondary structure of the bridge such as guardrail, and pavement that will be used to analyze the expenses incurred. Analysis of expenses incurred such as: analysis of its own weight, dead load, traffic load, and analyzes the influence of the time such as creep and loss of prestressing force. Then from the results of the analysis carried out control voltage that occurs in the structure, the calculation of reinforcement box, calculation of the
strength and stability of the structure, and the last stage of this planning is the planning of placement. In this final project planning is discussed using the prestressed concrete segmental box girder bridge. Planning is performed on the banks of this river include planning grindulu secondary structures, prestressed main structure, soil bearing capacity calculations, as well as the implementation methods of the building. In planning this author box girder bridge using a special calculation of the dimensions and the provision of prestressed force, and controls tailored to the calculation of non eccentrically prestressed concrete. The end of this planning is obtained shape and dimensions of box girder cross-section using a cantilever system to use as a launching gantry and the planned implementation of the method using zone earthquake zone 5 (five) were able to withstand the loads to obtain a safe design of the bridge structure. This plan must also meet the regulations regarding earthquake resistant buildings, such as the SNI T-02-2005, SNI T-12-2004, Pedoman perencanaan jembatan SKBI-1.3.28.1987 DPU, as well as rules regarding appropriate prestressed concrete box girder with prestressed bridge concept.

*Kata Kunci: Grindulu, Pacitan, Prestressed concrete, Box Girder, Segment, Cantilever, Launching Gantry, Precast*