INTISARI

Jembatan Pakelan—Salamkanci di Mertoyudan, Magelang merupakan jembatan beton yang melintasi Sungai Progo dianggap sudah tidak mampu menampung kapasitas lalu lintas jalan Mertoyudan—Bandongan untuk beberapa tahun yang akan datang. Penulis merencanakan jembatan alternatif dengan lebar efektif jembatan yang mampu menampung volume lalu lintas pada tahun rencana.

Jembatan yang direncanakan merupakan jembatan rangka baja tipe *Warren* dengan panjang bentang 60 m dan lebar efektif 8 m. Rangka jembatan beserta pembebanannya dimodelkan menggunakan SAP2000. Pembebanan meliputi beban sendiri, beban sendiri tambahan, beban lajur, beban truk, beban rem, beban angin, beban pejalan kaki, dan beban gempa. Reaksi akhir dari rangka kemudian digunakan untuk merancang perletakan karet. Kepala jembatan dan fondasi sumuran direncanakan manual dari pembebanan lanjutan dari perletakan dan hitungan tekanan tanah dengan data dari uji bor yang telah dilaksanakan.

Rangka horizontal terbesar menggunakan profil IWF 400x500x16x32, batang diagonal terbesar menggunakan profil IWF 400x400x13x20, pengencang dengan profil IWF 200x100x5x7, gelagar dengan profil IWF 500x200x10x16, dan diafragma dengan profil IWF 900x300x16x28. Perletakan digunakan berdimensi 450x600, kepala jembatan didapat dengan ketinggian 7,9 m, dan delapan fondasi sumuran dengan diameter 1,2 m dengan kedalaman 8,5 m. Seluruh komponen jembatan dicek kapasitasnya terhadap gaya ultimit dan diperoleh bahwa seluruh komponen aman.

Kata kunci: jembatan rangka baja, perletakan karet, kepala jembatan, fondasi sumuran

ABSTRACT

Pakelan—Salamkanci bridge is a concrete bridge in Mertoyudan, Magelang that crosses Progo river. The bridge is considered not capable of supporting its road's traffic capacity in a few years ahead. An alternative bridge is designed with effective road width that is able to contain the traffic volume in the planned years.

The bridge was designed using a *Warren*-type truss as its superstructure with a span of 60 m and effective road width of 8 m. The truss and its loads (self weight load, wind load, earthquake load, moving load, truck load, and pedestrian load) were modeled using SAP2000. The final reactions from the truss were then applied to design an elastomeric bearing. Abutment and caisson foundation were designed manually using loads that are transferred from the bearings designed previously and loads from soil pressure referring to a drill log that have been acquired prior to this research.

The biggest horizontal truss was designed using IWF 400x500x16x32, biggest diagonal truss using IWF 400x400x13x20, bracing beam using IWF 200x100x5x7, girder beam using IWF 500x200x10x16, and diaphragm beam using IWF 900x300x16x28. Each bearing's dimension is 450x600. Abutment's height is 7,9 m. The base of the bridge consists of 8 shallow foundations each with a diameter of 1,2 m and depth of 8,5 m. Each of every component was checked for its stability and strength to find the safety factor number for every component.

Keywords: truss bridge, elastomeric bearing, abutment, caisson foundation