

DESIGNING PRESTRESSED CONCRETE GIRDER I
AND DOUBLE PILAR FLYOVER BRIDGE DISTANCE 40 M
WITH LHR 8000 SMP TO 20000 SMP

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Abstract

This final project was designed a model of a flyover that uses prestressed concrete I girder with 40 m of spans and a double pillars with 8000smp LHR - 20000smp. The lower structure of flyover is a simple portal. The designed girder beam is fully prestressed concrete I, beam's pillar is designed as a partial prestress concrete, and pillar is designed using reinforced concrete. Load analysis performed by using structural analysis program SAP 2000 V 14. The flyover is designed to withstand the earthquake loads according to Pd T-04-2004-B and the bridge load in accordance with RSNI T-02-2005.

From the results of the design gained the distance between I girder 2.1 m, the dimensions of the I girder with 2.1 m high and 0.8 m wide and 5 pieces of tendon on prestressed girder beam with a strand number as many as 95 pieces. For shear reinforcement gained 4D13-75, 3D13-100 and D13-200 and D13-250. On the beam pillar planned gained beam pillar dimensions of 1.5 mx 2.5 m. The main reinforcement beams and pillars at the ground staging area are 17D36 and 30D36. Also used prestressing tendons of 5 pieces with the number strand as many as 95 pieces. Shear reinforcement are 8D16-100, 3D13-, 2D16 -400 respectively. Pillar dimension required is 1.5 mx 1.5 m with shear reinforcement in plastic hinge region 12D16-90 mm, and outside the plastic hinge 4D16-200 otherwise flexural reinforcement gained 44 D36.

Keywords: seismic analysis, beam pillar, flyover, full prestress, I girder, partial prestress, the loading, pillar, SAP 2000 V 14, Pd T-04-2004-B, RSNI T-02-2005