



Chilina Bridge over the Chili River in Arequipa. Balanced cantilever segmental bridge in high seismicity area

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Summary

Chilina Bridge is a 562 long prestressed concrete viaduct with two 11.3 m wide decks in the city of Arequipa (Peru) with span scheme: 100+157+142+102+61 m. Free Cantilever Method construction is used. High seismicity in the area reaches Peak Ground Acceleration of 0.6 g and involves special analysis and detailing. The new bridge will become the largest urban bridge in Peru when completed. Construction started in March 2013 and will be finished by the end of 2014.

Seismic analysis is done according to AASHTO specifications for a 1000 year return period Earthquake. Seismic displacement demands are as high as 90 cm and 45 cm in transverse and longitudinal direction.

Keywords: seismic analysis, cantilever bridge, segmental, Peru, AASHTO.

1. Bridge location

The Chilina Bridge is in Arequipa, in southern Peru. Arequipa is the second largest city in the country with about 800,000 inhabitants. The new bridge is located in the north of the city, across the Chilina valley, crossed at the bottom by the River Chili. In this area, the valley has a width of 500 m and a depth of 50 m. The Chili River and its valley are the main obstacle to uniting the districts of the city of Arequipa in both margins, which are growing densely populated. The bridges across the River Chili are scarce and all are located in the south central area of the city, creating a situation of heavy traffic often collapsed. The new bridge is part of a ring road to alleviate this situation. The Chilina Bridge once built will be the largest urban Peru (see Figure 1).



Fig. 1. Rendered view of the Chilina Bridge in Arequipa, Perú.