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Anticipate Construction of Single Pylon Cable-Stayed Kretek II Bridge in Near-Fault Zone

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1 Abstract

The earthquake event occurred with a magnitude of 7.4 which caused a tsunami and liquefaction was the cause the Ponulele bridge collapse, which precisely cut the location of the fault. Such events are expected not to occur in other locations. The characteristics of Kretek II cable-stayed bridge location is relatively identical to the location of the Ponulele Bridge. The distance of Opak fault from the location of the planned Kretek II Bridge is approximately 20 m with a slip-rate of 2.4 mm/year. This situation is also exacerbated by local soil conditions that have the potential for liquefaction.

Keywords: Kretek II Bridge, Indonesia Earthquake, PSHA, DSHA, Near-Fault, Cable-Stayed Bridge

2 Introduction

In terms of geography and geology, Indonesia has a great potential for natural disaster. Most common natural disasters include earthquake, tsunami, volcano, landslide, hurricane, flood, erosion and others. Hundreds, even thousands of human victims were affected in every natural disaster. Because such disasters cannot be prevented, the only alternative is to study and perform various mitigation efforts to minimize fatality. Mitigation, which a strategy to perform various preventive action to minimize negative impact from natural disasters that has been anticipated on a particular region, is a long-term investment for the prosperity of the social community. Mitigation can be in a form of structural or non-structural. There appears to be a tendency that it is necessary to focus on mitigation efforts than on post-disaster response.

The planning of Kretek II Bridge located in Bantul Regency, D.I. Yogyakarta Province is prone to liquefaction hazard. Based on the site investigation, the location is relatively susceptible to liquefaction hazard.

3 Kretek Bridge

Kretek Bridge (figure 1) is a single inclined pylon cable-stayed bridge. It consists of a main span of 100m and side-spans of 32m. The pre-stressed concrete box girder with height of 3.6m and width of 22.5m is supported by stay-cables from inclined pylon.

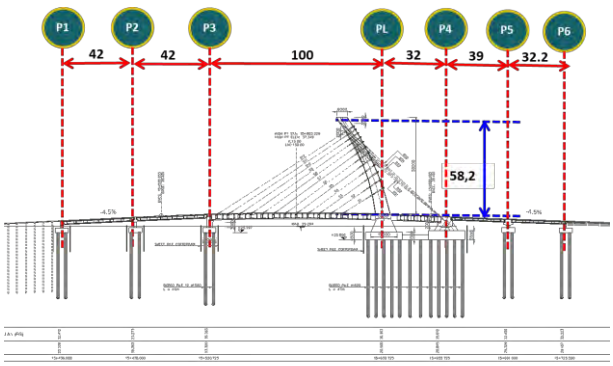

Figure 1. Elavation view Kretek II bridge

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