ABSTRACT

The earthquake in Yogyakarta happened on May 27, 2006 at 5.53 Am, with a magnitude 6.2 Scale Richter, where its epicenter was located at Northern shore of Yogyakarta Province (Source: USGS, USA) had caused damages on bridges of main roads in Yogyakarta Province. The roles of these bridges in delivering aids to the earthquake victims were very important. With this research, it is hoped that the accurate information, location, types of damages on the structural upper and down level of reinforced bridges may be obtained by using visual investigation and evaluation on earthquake on the basis of SNI 2004 so that the method for renovation both permanent and temporary can be decided. By doing so, those bridges could able to serve the traffic.

In this research, the investigation was conducted visually and the test by UPV and Schmidt Hammer instruments on quality of the concrete on upper and down level of bridge buildings. And then the structural safety of evaluation was carried out on Panasan Bridge with type T beam which has its reaching length 22 meters based on load regulations for bridges in accordance with RSNI 2004, by comparing between necessary strength (U) and resistance R if U > R, making renovation or strengthening with Carbon Fiber Reinforced Polymer (CFRP).

From the results of investigation, there were damages on reinforced level around the oprit and expansion joint. Damages on the reinforced floor were in different elevation, need to be immediately renovated because it could affect the safety of the riders on the road. Damages also happened to the old bridge's pillars that have been gone under local settlement, uneven slope. The cause of load was found that flexible capacity needs a bridge cannon: 6817,1289 kNm, whereas the capacity of flexible bridge cannon that available: 4047,8742 kNm or ØMn < Mu, thus the beams were not safety. To strengthen this, three fold of CFRP production of SIKA was used which set up in layers. With this method, there was an increasing of flexible capacity from 4047,8742 to 7369,5554 kNm, thus the flexible capacity that available was increased to 82 %. The shear capacity of the beams that available was more than what needed or ØVn > Vu, thus the poles were safety. The effects of earthquake load which stretched and crossed, it was found the flexible capacity and the pillar space were bigger than what was needed, thus the pillars would be safe.

Keywords: *T Beam, Safety Evaluation, Earthquake load, Carbon Fiber Reinforced Polymer (CFRP).*