

ABSTRACT

The bridge is one of public infrastructure that expected have ability to operate for many years. In its service ability may occurs degradation of bridge structure performance. For study case, in late of 2011 Kutai Kartanegara Suspension Bridge at Tenggarong, East Borneo has collapsed. Many factors that influence deck bridge's decline (camber). Camber decline is a serious problem for bridge structure performance and it prohibited to exceed from extent permitted. Bridge construction needs security system that can monitoring bridges framework structure regularly.

This research is designed a fiber optic displacement sensor. In this case, sensor can detect displacement that represent of camber decline. We use Rumpiang Bridge-Arch Type which crosses Barito River at Barito Kuala District – South Borneo as a model. We have designed 2 kind of sensor configuration. Each design has 4 kind of skenario. Each skenario has fix variabels and unfix variabel. The aim of this variaties are to find the best design configuration for bridge structure implementation.

From the design result that have been done, we obtained location for mounting fiber optic displacement sensor to represent camber decline is on metal bearing. Photo current generated by detector PDQ80A at worst case condition is 86,84123016 mA. This value suitable with the spesification of operating current for telemetry system. This sensor suitable for outdoor uses.

Keywords: displacement sensor, fiber optic displacement sensor, metal bearing displacement, camber decline