

**CONTROLLER DESIGN FOR CABLE-STAYED BRIDGE
OF CAPE GIRARDEAU, MISSOURI, USA
SUBJECTED TO EARTHQUAKE**

Final Project

by:

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**INTERNATIONAL S1 PROGRAM
DEPARTMENT OF CIVIL ENGINEERING
FACULTY OF ENGINEERING
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APPROVAL

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has been approved

Yogyakarta, 21 December 2010

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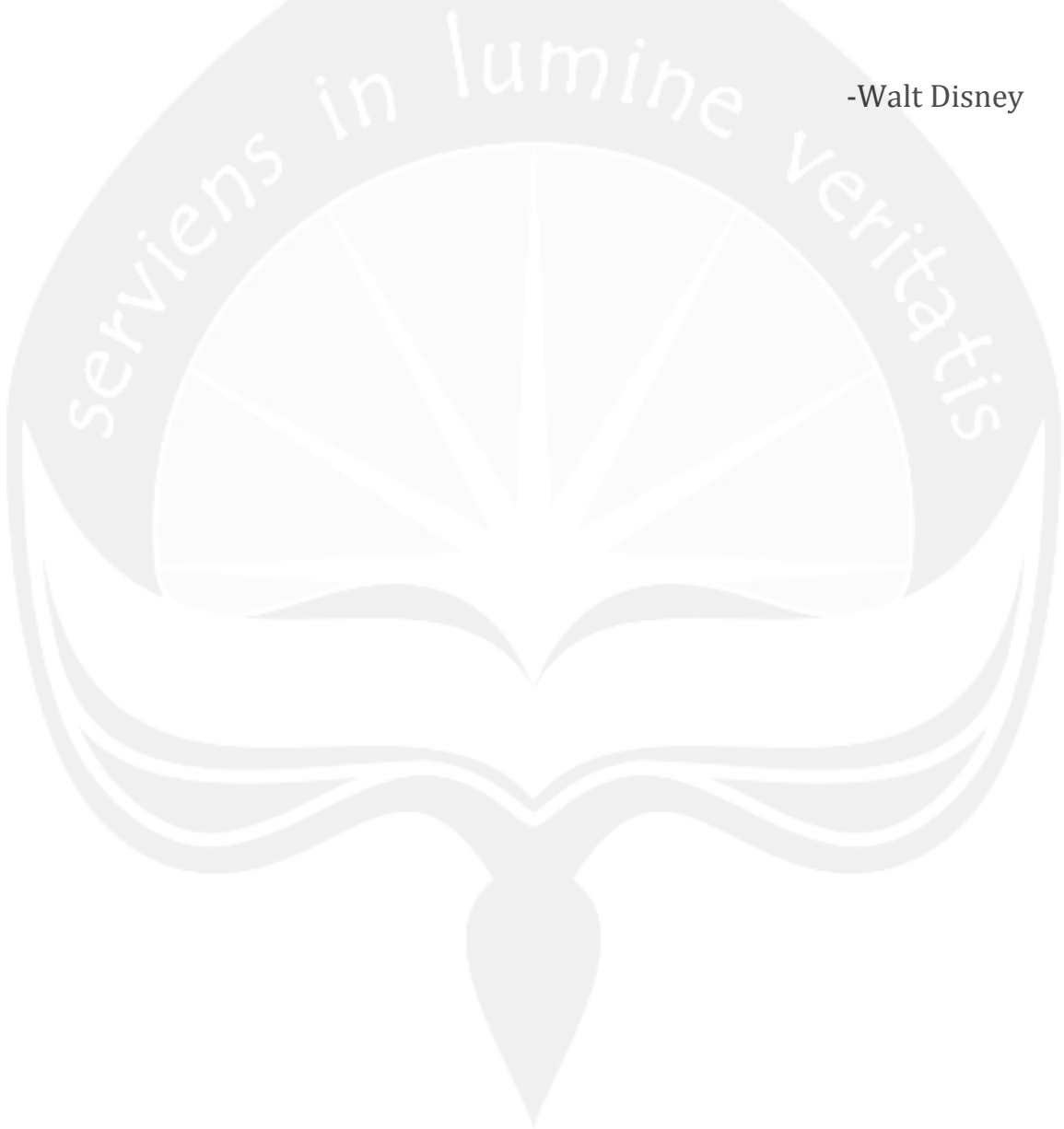
"Around here, however, we don't look backwards for very long.

We **keep moving forward**, opening new doors and

doing new things, because we're curious...

and curiosity keeps leading us down new paths."

-Walt Disney



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ABSTRACT

CONTROLLER DESIGN FOR CABLE-STAYED BRIDGE OF CAPE GIRARDEAU, MISSOURI, USA SUBJECTED TO EARTHQUAKE, Untung Adi Dharmawan, 061312656, year 2010, Department of Civil Engineering, Faculty of Engineering, Atma Jaya University.

The benchmark for the cable-stayed structure was created by Dyke et al (2002) based on the detailed drawings of Bill Emerson Memorial Bridge located in Cape Girardeau, Missouri, USA. The construction of the bridge has been completed in 2003. Arfiadi and Hadi (2006) developed the active continuous bounded controller, which is a modification of bang-bang controller. The proposed system is then applied to the bridge model. The model is then subjected to three earthquakes, they are El Centro (1940), Mexico City (1985), and Gebze(1999). In this work, the performance of active continuous bounded controller is investigated compared to other controllers. The result shows that the controller has successfully reduced the bridge responses to all three earthquakes, except the shear at the deck level and the displacement of the deck. Therefore, extra measures must be taken to use the controller.

Keywords: cable-stayed bridge, benchmark, controller, active, continuous, bounded