THESIS

VERIFICATION OF TUNED LIQUID DAMPER FOR REDUCING RESPONSE OF STRUCTURES DUE TO EARTHQUAKE EFFECTS

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Yogyakarta, 5 Juli 2019

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FOREWORD

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This report is far from perfection and only a small portion of vast amount of knowledge in Civil engineering suggestion and recommendation which are constructive for this thesis are greatly appreciated. With this thesis the author hope that this work can be used as reference to developed and improving this topic for further advancement in civil engineering study especially in modal analysis of the structure.

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ABSTRACT

One way that can be used to increase the resistance of structures to dynamic loads is to add damping to the structure. Tuned Liquid Damper is a rigid liquid filled tank and is positioned on one of the floors of a building with the aim of reducing the dynamic response of the structure to external excitation.

Using the formula of den hartog optimum TMD modified with

formula for frequency of rectangular Tuned Liquid Damper, several set of table and graph is made to select the optimal dimension of TLD. Using TLD with this dimesion an experimental nodel is created and the result is compared with simulation model. The results from this study shows that displacement matlab model has 7.4% at first floor and 8.1% at second floor. Also the result for displacement experimental has 18.75% at first floor and 13.63% at second floor. Therefore it can be concluded between these two methods TLD have significant impact in decreasement of structure response.

Keyword: Tuned Liquid Damper (TLD), Optimation of TLD Dimension, Response Structure, Acceleration Sensor.