

APPLYING VALUE ENGINEERING IN ROAD RECONSTRUCTION BY  
USING RECYCLING TECHNIQUE

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## DECLARATION

I declare that this thesis entitled "*Applying Value Engineering in Road Reconstruction by using Recycling Technique*" is the result of my own research except as cited in the references. The thesis has not been accepted for any degrees and is not concurrently submitted in candidature of any other degree.

Signature :  .....

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Date : 3 SEPTEMBER 2012 .....

## **DEDICATION**

“To my beloved wife, mother, father, brothers, and sisters  
for the Love and Support”

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## ABSTRACT

Road plays an important role in the economic development of the country. Indonesia has  $\pm$  472.000 km of roads in its entire country. It is necessary to maintain function of the road in order to ensure maximum benefit to achieve the designated technical life span. There are various ways to maintain the road, it is based on the pavement distress condition and the structured capacity of existing pavement. Reconstruction is one of the efforts to maintain the road. Road reconstruction is usually done on road that the condition is badly damaged. The issue of cost and sustainable construction should be considered by the relevant institution to choice the most suitable design in road reconstruction. One method to respond to the issue of sustainable construction is the use of road recycling techniques, whereas the method which is used to improve the design value is value engineering (VE). The objective of this study is to establish designs of road recycling technique in road reconstruction work. The research instrument which is used in this study is case study. Three case studies are determined to exercise the application of value engineering (VE) on road reconstruction work by using recycling technique. These three case studies are the deteriorate road which located in West Java Province. VE is applied by following the VE job-plan: information phase, function analysis phase, creativity phase, evaluation phase, and development phase. The implementation of VE job-plan in each phase carried out by performing a simulation workshop. The simulation carried out by gathering some experts who are experienced in the field of road maintenance. The result of applying VE in such locations is four general designs for reconstructing road structural failure. The first design is AC-WC with PC filler + AC-BC + CMFRB-Base with PC filler + CTRB, the second design is AC-WC Modification + AC-BC + CMFRB-Base with PC filler + CTRB, the third design is AC-WC with PC filler + AC-BC + CMFRB-Base with Hydrate Lime filler + CTRB, and the last design is AC-WC Modification + AC-BC + CMFRB-Base with Hydrate Lime filler + CTRB. Difference cost of its designs has a range from Rp. 27.08 million to Rp. 60.45 million. VE can be applied in reconstruction work by using recycling technique. This can be a guide for clients to choose a design that suits their objective and desire.