

C215220 : MAJOR CIVIL ENGINEERING

KEY WORD: : COMPUTER / RURAL / HIGHWAY / DESIGN / DRAFT

SOMKIET SIRIPITUKDET : COMPUTER-AIDED RURAL HIGHWAY DESIGN AND DRAFTING. THESIS ADVISOR : PROF. DIREK LAVANSIRI, Ph.D. 218 pp. ISBN 974-584-441-1

Highway design and drafting processes are complex. Revision of the design is laborious. The objective of this study is to develop a computer-aided rural highway design and drafting program.

The design procedures of the developed computer program are divided into 4 steps. The first step is to input data needed in the design. The second involves the design of highway safety elements of the horizontal alignment. The third deals with the vertical alignment design. The last step is the plan profile sheets drafting.

Using the program, the user first enters the data, design standards, and constraints. Then designs the alignments of the highway in a graphic mode. The program will calculate the highway elements, check for the constraints, and display the design results. If the results are not satisfactory, the user can revise or redesign by repeating the similar steps.

The program was tested by applying on a four-kilometer section of a highway. The results obtained were compared to those getting from the engineer. It was found that the calculations of the important elements were the same and correct. There were slightly difference in some elements due to difference in assumptions and methods. Hand calculations were performed to rechecked and found that the results obtained from the computer program were correct. The drafting part was capable to draw the essential elements correctly in the standard formats.

The design and drafting by the computer program will reduce time and labours and allow the user to easily revise or redesign.