Somyos Wongsook 2010: Development of Program for Simulation and Evaluation of Evacuation Time on Escape Stairs. Master of Engineering (Fire Protection Engineering), Major Field: Fire Protection Engineering, Interdisciplinary Graduate Program. Thesis Advisor: Mr. Apichart Chaengbamrung, Ph.D. 121 pages.

The objective of this study is to develop a program for simulation and evaluation of the evacuation time on escape stairs conformed to the NFPA Ready Reference Human Behavior in Fire Emergencies and the fire protection standards of the Engineering Institute of Thailand. When using manual calculation for evaluating of the evacuation time, there are many equations that will take a long time causing of calculation errors. Especially when designing high rise building, it has to change several physical variables of the exits to estimate the proper evacuation time. The program, written based on Netbeans IDE 6.8 and operated on Java Application, consists of 3 steps; parameter input, evacuation time calculation and evacuation procedure.

The result of this study, it found that the calculated evacuation time from the program is accurate compared to that of the manual calculation. The program was then applied to study the evacuation time affected by physical variables of the exits such as door width, riser height, landing length and floor to floor height. It found that the door width has significant effect on evacuation time than any other variables. After testing the program for a newly designed Bangkok's building with 3 stairways for the 10th to the 25th floor and 4 stairways for the 1st to 9th floor, it found that the evacuation time is 1,997 seconds (or 33 minutes and 17 seconds), which is less than 60 minute required by law. This means the building has proper and enough exits for evacuation.

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