

Phuttarasuda Phosri 2009: A Study on Improvement of the Existing Drainage System of Phaya Thai Area by InfoWorks CS. Master of Engineering (Water Resources Engineering), Major Field: Water Resources Engineering, Department of Water Resources Engineering. Thesis Advisor: Assistant Professor Napaporn Piamsa-nga, M.Eng. 169 pages.

The study of Improvement of the Existing Drainage system was performed in Phaya Thai district located in the middle of Bangkok. Phaya Thai has high residential density and is counted as a high potential of developments. Consider from these factors, the area has not enough efficiency drainage systems. Consequently, the repeated periodic flooding is usually occurs after intermediate to heavy raining. Therefore, necessary to study performance of a existing drainage system to find the suitable solution responsive to the present and future landuse development so that effectiveness of drainage capacity in the integrated system can be achieved

The research use Mathematical model named InfoWorks CS for apply to evaluate a performance of drainage system in study area. Boundary of study is the north of Phaya Thai district to Bang Sue canal, the south of Phaya Thai district to Samsen canal, the west of Phaya Thai district to the north train route and the east of the district to Vibhavadi Rangsit Road. Procedure is commencing by studying existing drainage system, landuse pattern and rainfall to simulate the hydraulic characteristic of drainage system. The calibration of local parameter which effect on simulation model were adopted. Various alternative improvement of drainage capacity of the study area were also evaluated.

Regarding to the study, it is found the existing drainage system can handle the design rainfall lower 2 years return period with 3 hours duration. In case of the design rainfall higher than 2 years return period, there will be flood in Pradiphat road, Soi Sena Ruam, Phahon Yothin road, Sutthisan Winit Chai road and some areas. To according the results, improvement the existing drainage system of the study area to meet with design rainfall 2 years return period (accumulative depth of 60 millimeters) on future landuse. To increase the drainage capacity, provided detention area and adopted pumping stations. The simulation hydraulic behaviour of recommend drainage system can distribute to is 3 the cause. In case of 1, the maximum flood volume will be reduced 1,195.90 cubicmetres/sec and period of flood time will be reduced 0-15 minutes. In case of 2, maximum flood volume will be reduced 1,687.80 cubicmetres/sec and period of flood time will be reduced 0-20 minutes. In case of 3, maximum flood volume will be reduced 2,137.40 cubicmetres/sec and period of flood time will be reduced 0-15 minutes.

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Thesis Advisor's signature