

## C819091 : MAJOR WATER RESOURCES ENGINEERING

KEY WORD:

MODELLING / HYDRAULIC / SPILLWAY WITH NONLINEAR CREST

PHICHET RATANAPRASATKUL: MODELLING OF HYDRAULIC BEHAVIOR OF SPILLWAY WITH

NONLINEAR CREST. THESIS ADVISOR : ASSO. PROF. DR. SUCHARIT KOONTANAKULVONG .

THESIS COADVISOR : PROF. JAKRI JATUTASRI . 146 pp. ISBN 974-331-244-7.

The study was done to investigate the flow behaviors of spillway with nonlinear crest from physical model with scale 1:50. The study considered the flow separately into three parts: i.e., upstream intake, Chute and stilling basin.

From the experiments when discharge is less than 21.02 l/s the designed upstream intake, chute and stilling basin can drain the flow adequately with energy dissipation of 80-90%. But when discharge is more than 21.02 l/s ( $0.52Q_{max}$ ), the depth at control section increases more than the critical depth which induced the submerge flow and water depth flow fluctuation in upstream intake and partly subcritical flow in chute 1 flow. In chute 2 is always supercritical because of steeper slope. In the stilling basin, hydraulic jump occur out of the stilling basin i.e., sweep-out phenomenon and cause scouring at downstream. The energy dissipation reduced to be only 50-60% in the stilling basin. As concluding the designed upstream intake has inadequate slope and channel width and the tailwater of dissipation basin is too low.

The improvement scheme are proposed for both upstream and downstream parts to counter the sweep-out the flow. As the results, the slope of upstream basin should be more than critical slope and the width of drainage channel of upstream intake should more than 25-35% of overflow length. While the level of downstream stilling basin should be more than 30-40% of maximum jump depth which can dissipate energy up to 90%.

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สาขาวิชา.....วิศวกรรมแหล่งน้ำ

ปีการศึกษา..... 2541

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