

พิมพ์ต้นฉบับบทความวิทยานิพนธ์ภายในกรอบสี่เหลี่ยมนี้เพียงแผ่นเดียว

## C615108 : MAJOR CIVIL ENGINEERING

KEY WORD: HYDRAULICS / SPILLWAY CREST / DISCHARGE COEFFICIENT

JITTI KANOKVICHITRA : HYDRAULIC OF FLOW OVER NON-LINEAR ALIGNMENT SPILLWAY CRESTS.

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This study aimed at an experiment of the flow over spillway crest with non-linear alignment. There were 6 cases of spillway crests adopted, i.e. linear crest, half circular crest, wide  $\square$ -crest, curved  $\cap$ -crest, narrow  $\cap$ -crest and U-crest. All crest shapes are sharp-crested weir. The experiment was made in The Hydraulic and Coastal Model Laboratory of the Department of Water Resources Engineering. A flow channel bench was made up. Hydraulic models of spillway crests were erected about 0.105 m high and 0.60 m long. All crest lengths were approximately equal. During experiments, the flow was varies with the head above spillway crest between 1.0-5.0 cm.

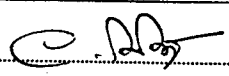
The analysis of flow and velocity data from the experiment concluded that the spillway could be arranged from the high discharge to low discharge at a constant head as followed : wide  $\square$ -crest, curved  $\cap$ -crest, narrow  $\cap$ -crest, half circular crest, linear crest, and U-crest. All cases, the discharge increased with the flow head. Several relationships were studied between discharge and head (Q-He), Weir coefficient and head (C-He), and discharge coefficient and the ratio of head and weir high (C-H/p). Power series and logarithm functions were used as the fitting equations. The relationship of  $Q = CLH_e^x$  yielded very high regression coefficient  $R^2 = 0.97-0.99$ . The x exponent varied between 1.5-1.9 which was higher than the theoretical value,  $x = 1.5$


From the experiment using  $Q = CLH_e^x$ , the value of weir coefficient C was calculated between 1.2-1.5 while the theoretical value varied between 1.8-2.2. This study was able to concluded that the non-linear alignment spillway crest with its crest extended upstream had higher discharge than a linear one.

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