Intermediate V-Notch Weir Sizes

There are six standard angles for V-notch weirs: 22-1/2°, 30°, 45°, 60°, 90°, and 120° any for most applciations these are sufficeint. There are times, however, where flow measurement at a site needs to be more finely tuned that the standard sizes allow or a site needs to be calibrated for an incorrect made weir notch. Regardless of the reason, there is a need to be able to calculate discharge equations for intermediate V-notches.

For V-notches between 25 and 100 degrees, the Kindsvater-Shen relationship can be applied to calculate the free-flow discharge equation (Kulin and Compton). The equation is as follows:

$Q=4.28\ C_e \tan(\text{Ø}/2)\ h_{1e}^{2.5}$

Q = discharge (cfs)

Ce = effective discharge coefficient

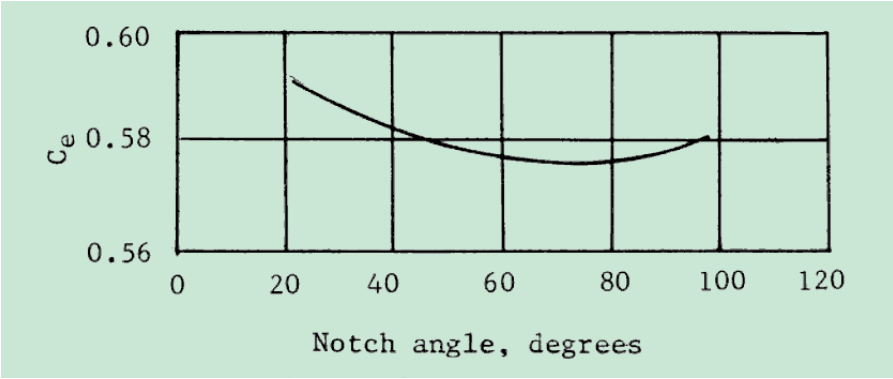
h_1 = head on the weir (feet)

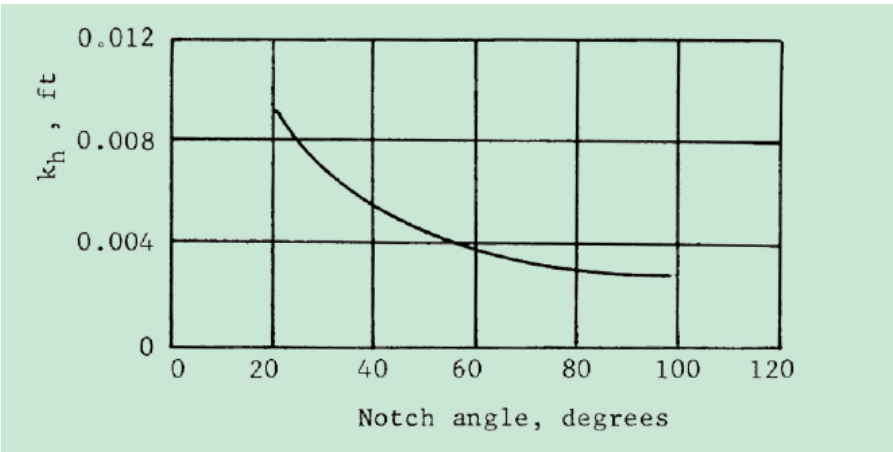
$h_{1e} = h_1 + k_h$ (feet)

k_h = head correction factor (feet)

Ø=angle of V-notch

The effective discharge coefficient, C_e, and the head correction factor, k_h, can be obtained from the charts below (BSI):





Note that the equation and correction factors apply to fully contracted V-notches. Partially contracted (90°)V-notches rely on different C_e values.