

(A.1) Determine the pressure,  $P_1$ , that exists at discharge elbow outlet (Fig. II-2-1).

$$P_1 = \frac{W}{A_1} \frac{(b-1)}{b} \sqrt{\frac{2(h_o - a)J}{g_c (2b-1)}}$$

where

$A_1$  = discharge elbow area, in.<sup>2</sup>

$g_c$  = gravitational constant  
= 32.2 lbm-ft/lbf-sec<sup>2</sup>

$h_o$  = stagnation enthalpy at the safety valve inlet,  
Btu/lbm

$J$  = 778.16 ft-lbf/Btu

$P_1$  = pressure, psia (lbf/in.<sup>2</sup>, absolute)

$V_1$  = ft/sec

$W$  = actual mass flow rate, lbm/sec

Fig. II-2-1 Discharge Elbow (Open Discharge Installation)

