FPST 2343 – Essentials of Industrial Hygiene – Chapter 8 Sample Problem 11

A solvent dip tank is equipped with a 2.5 ft. long flanged slot hood to exhaust vapors, and the hood volumetric flow rate is 1,5000 ft^3/min. If this hood needs a minimum capture velocity of 100 ft/min to protect the workers from exposure, how wide in inches can the solvent tank be to maintain the minimum capture velocity across the thank?

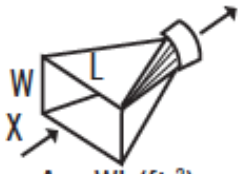
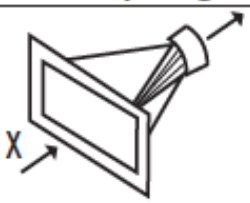
Hood Type	Airflow into Hood	Hood Entry Loss Factor (F)
 A = WL (ft.^{2}) **Plain Opening**	$Q = V_x(10X^2 + A)$	$0.93\ VP_{duct}$
 **Flanged Opening**	$Q = 0.75V_x(10X^2 + A)$	$0.49\ VP_{duct}$
 (L = Length of Slot) **Flanged Slot**	$Q = 2.6\ LVX$	$1.78\ VP_{slot}$ + $0.25\ VP_{duct}$

Figure 8–11. Hood data for selected capturing hood types, the air flow needed to generate a specified velocity, and the hood entry loss factor.