Darcy Wiesbach Equation

Darcy-Weisbach Equation

Henry Darcy and Julius Weisbach

$$h_f = f \times \frac{L}{D} \times \frac{V^2}{2_g}$$

- Valid for laminar or turbulent flow regimes.
- Valid only for circular pipes flowing full.

Where: h_f = Head loss created by viscous effects (ft.)

f = D-W non-dimensional resistance coefficient

L = Length of conduit (ft.)

D = Diameter of conduit (ft.)

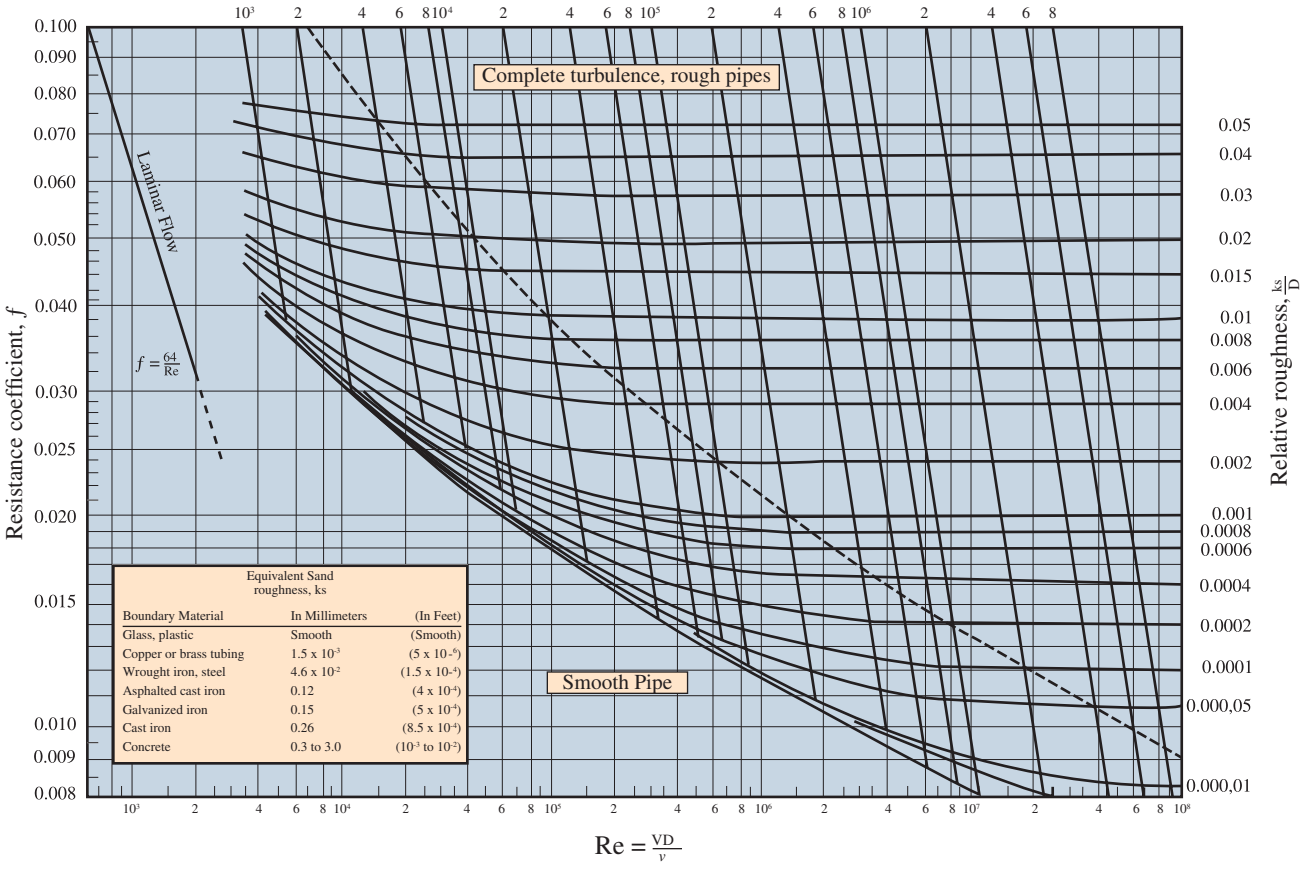
$\frac{V^2}{2_g}$ = Velocity head (ft.)

Where f is an empirically-derived coefficient which is a function of Reynold's Number and relative roughness of pipe. f can be determined with the use of the Moody Diagram (shown below).

- Re: (Reynold's Number) $= \frac{VD}{V}$
- $\frac{K_s}{D}$ (Relative Roughness) $= \frac{K_s}{D}$

Moody Diagram

$$\text{Re } f^{1/2} = \frac{D^{3/2}}{v} \left(\frac{2ghf}{L}\right)^{1/2}$$



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